OHIO STATE
UNIVERSITY

Gleanings in Bee Culture

In the fragrant hush of the evening,
When the sun is sinking low,
When the earth is lulled to peace and rest
And the sunset colors glow—
The air is filled with the humming
From many a tiny wing,
As hast'ning home ere the fall of night
The bees come flying in.

All day long through the golden hours
They countless journeys made
To the distant field of clover sweet,
To pasture and woodland shade.
Straight and sure was their busy flight
And now in the twilight dim,
Swiftly over the tree-tops green
The bees are flying in.

Selfless, fearless, and tireless,
They work for the good of all,
Blindly obeying the unseen Power
That bids them move at its call.
And I learn a lesson of steadfast faith
For the work where I would win
As I stand at the quiet twilight hour
And watch the bees fly in.

—Florence M. Smith.

Vol. LI. May, 1923 No. 5

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

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Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

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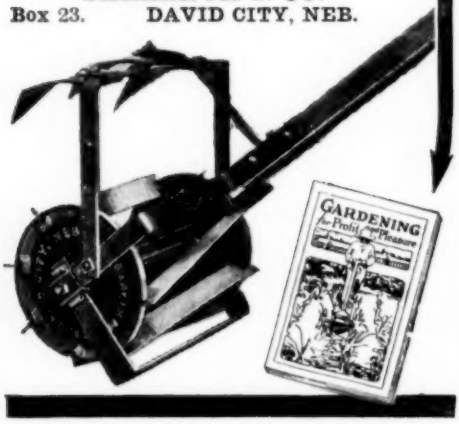

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Town .....

State..... RFD or Box.....

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A. I. Root Co. of Syracuse,

1631 West Genesee Street
SYRACUSE, N. Y.

Serves You Best

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Editorial Staff

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5 10-frame Metal-covered Hives, with inner cover, 1 story	15.75
5 11-frame Modified Dadant Hives, 1 story	18.90
100 Hoffman Frames	5.90
500 Hoffman Frames	27.00
5 10-frame Bodies with Frames	7.30
5 8-frame Bodies with Frames	6.60
1000 No. 1 grade 4¼x4¼x1⅞ Sections	12.60
500 No. 1 grade 4¼x4¼x1⅞ Sections	6.40
5 pounds Medium Brood Foundation, per pound	.65
50 pounds Medium Brood Foundation, per pound	.60
5 pounds Light Brood Foundation, per pound	.68
50 pounds Light Brood Foundation, per pound	.63
5 pounds Thin Surface Foundation, per pound	.70
50 pounds Thin Surface Foundation, per pound	.65
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1 Standard Uncapping Knife	1.15
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"THE BUSY BEE MEN"
CINCINNATI, O

HONEY MARKETS

U. S. GOVERNMENT REPORTS.

Information from Producing Areas (first half of April).

CALIFORNIA POINTS. Southern California.—Light rains fell early in April, but they were not sufficient to counteract the long-continued drought. Very little honey looked for from wild flowers, and little surplus expected from sage except in favored areas. Total rain thus far only half last year's amount. Brokers buying up small lots sage honey as protection against the shortage which they expect in this year's sage crop. The early orange crop will be generally over by May 5, and much smaller than anticipated a few weeks ago. Rainy or misty weather has curtailed activities of bees on orange bloom. The demand for small lots still remaining on hand shows some improvement. Beekeepers are said to be receiving 10c per lb. for white orange, 9-10c for white sage, 7¼-8½c for light amber sage, and 25-28c cash for beeswax. Some extracting being done on new orange, but no sales reported. Sales and quotations per lb., for carlots, on usual terms basis, follow: White orange and white sage 10-10½c, light amber sage 8½-9c, light amber alfalfa 6¾c. Alfalfa is reported practically cleaned up. Beekeepers representing associations in the seven counties of southern California have recommended to their associations that the carlot price of new honey be set at 12c for white and 10c for light amber, with higher prices for smaller lots. Northern California.—Copious rains early in April have brightened crop prospects, and the outlook for star thistle is for at least a normal growth. Supplies of honey very light. Demand for dark honey is reported good. Small lots sales reported of white extracted at 9c per lb., of light amber at 7½c, and of dark amber at 6½c per lb.

PACIFIC NORTHWEST.—Cold, rainy weather has held back brood-rearing and plant life is generally reported at standstill. Some bees working on fruit bloom. Several carloads extracted reported still unsold. Sales very light; few small lots white extracted reported sold at 10c per lb. and light amber at 9c.

INTERMOUNTAIN REGION.—Two weeks of sunshine, followed by several days of rain, have given plants a good start in growth in some areas. Other sections report heavy snow on the ground and backward plant growth. Bees have been gathering pollen from willow and locust. Reports vary greatly as to amount of winter loss. Small beekeepers are generally cleaned up, but numerous cars extracted still remaining in possession of large producers. Carlot sales white extracted reported at 7½-8c per lb., with small lots in 60-lb. cans selling up to 10c per lb. Beekeepers receiving 7c per lb. for white extracted, 6c for light amber, and 25-26c per lb. for beeswax.

ARIZONA POINTS.—Season reported backward from cold and wind. Strong colonies are getting sufficient stores to advance brood-rearing, but weak colonies require feeding. Mesquite districts are quite dry, but prospects are fairly good for a crop in the irrigated districts. 1922 crop largely cleaned up.

TEXAS POINTS.—With warm days and cool nights, colonies are building up rapidly. Honey plants are now getting in good condition following ample rainfall, but crop will be six weeks late as a result of freezes during March. Light flows of nectar coming in some sections. Colonies short of stores, but few beekeepers are reported to be feeding. A few swarms reported already, and indications seem to point to excessive swarming later. Little honey remains unsold.

PLAINS AREA.—Snow reported on ground, except in southern section, and most colonies are still in cellars. Many colonies light in stores. Biennial clovers reported in rather poor condition. Better inquiry, but few sales reported. One car white clover and sweet clover mixed reported sold at 8c per lb., with smaller lots white extracted selling up to 11c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Spring very backward, and snow still on ground in northern portion. Where not protected by snow the continued freezing and thawing of the ground have lessened prospects for clover crop. Many colonies still reported in cellars. Some small beekeepers reporting large winter loss and considerable spring dwindling anticipated. Comb honey practically cleaned up, and extracted honey is selling steadily although slowly, with only large producers having much on hand. Demand improving, even for off-grade stock. One carlot sale white clover extracted reported at 8½c, with less carlots in 60-lb. cans selling up to 11c per lb. Small lot sales dark honey reported at 9c per lb.

NORTHEASTERN STATES. — Dysentery, spring dwindling, and lack of stores have resulted in severe losses, even among well-packed colonies. Many report losses high as 25 per cent. Spring very cold and late and most colonies are still in cellars. Clover wintered well. Very few sales reported, as supplies are practically exhausted.

SOUTHEASTERN STATES.—March and early April proved to be a very bad period for bees. Cold, rainy weather caused many unfed colonies to die of starvation. Bees are reported below normal in condition. Titi through blooming; little surplus stored due to variable weather conditions. Package bees said to be moving slowly, with few orders on file.

WEST INDIES: Porto Rico. — Local rains are putting vegetation in thrifty condition. Some extracting is being done on the North Coast—about two-thirds the normal amount for this time of year. It is reported that around 63c per gal. is being offered for amber extracted, f. o. b. shipping points, with supplies unusually light. Cuba.—The season was so dry from the first of year to April 1 that bees were able to gather but little nectar. Rains have now started and a short two-months' honey-gathering period is hoped for. European buyers are reported offering 75c per gal., including cost and freight, but no sales reported for several weeks. Amber extracted is quoted at 5c per lb., f. o. b. Cuban points.

Special Foreign Quotation.

LIVERPOOL.—There has been a steady market during the past month. The price of extracted honey in American money is from 10 to 11c per pound. Beeswax is from 29 to 30c per pound. Taylor & Co.

Liverpool, England, April 5.

From Producers' Association.

The recent rise in the price of sugar has increased the demand for honey and has tended to stiffen the prices. There is practically no honey left in Texas, and I doubt if a carload could be shipped at this time. There will be very little, if any, honey carried over. Honey plant conditions are only fair because late frost caused much damage. Winter losses of bees were below normal, but spring condition is not good because colonies are light in stores and low in colony strength.

Texas Honey Producers' Association,
San Antonio, Tex. E. G. LeStourgeon, Mgr.

The A. I. Root Company's Report.

We have made no purchase of either comb or extracted honey since the last issue of Gleanings in Bee Culture was published.

The Opinions of Honey Producers

Early in April we sent to actual honey producers and some associations the following questions:

1. What portion (if any) of the 1922 crop of honey is still in the hands of the producers? Give answer in per cent.

2. At what prices has honey been sold in large lots at the producers' station during the past months? (a) Extracted honey per pound (b) Comb honey, fancy and No. 1 per case?
3. What prices to retailers in small lots? (a) Extracted honey in 5-lb. pails or other retail packages? (If in other packages give answer in terms of 5-lb. pails.) (b) Comb honey, fancy or No. 1 per case?
4. What is the retail price to consumers? (a) Extracted honey in 5-lb. pails or other retail packages given in terms of 5-lb. pails? (b) Comb honey, fancy or No. 1 per section?
5. What is the per cent of winter and spring loss (if any) to date?
6. What is the condition of the colonies at present compared with normal, taking into consideration their strength, amount of stores and amount of brood? Give answer in per cent.
7. What is the condition of the honey plants at this time compared with normal? Give answer in per cent.
8. How does the early honey flow (if any) thus far compare with normal? Give answer in per cent.

The answers as returned by our corps of bees and honey reporters are as follows:

State.	Reported by:	Crop Unsold.	In large lots. Ext.	Comb.	In small lots. Ext.	Comb.	Retail prices. Ext.	Comb.	Win. Loss.	Col. Con.	Plant Con.	Hon. Flow.
Ala.	J. M. Cutts	0	$.08		$ 60	$4.80	$.90	$ 25	3	50	75	25
Ala.	J. C. Dickman	0					1.00	.25	10	80	80	80
Ark.	J. V. Ormond								5	50	100	
Ark.	J. Johnson	0					1.00	.25	2	85	75	75
Cal.	G. Larinan		.09½								100	
Cal.	L. L. Andrews		.07½				1.00		10	90	50	50
Cal.	M. A. Sayler	4	.09	$3.60	.65	4.00	.75	.25	10	100	100	100
Cal.	M. C. Richter	10	.07½				1.25		3	100	100	90
Col.	J. A. Green	50	.07½		.65		.80	.17	6	95	100	
Col.	B. W. Hopper	0							2	100	90	
Conn.	A. Latham	20	.15		1.00	6.30	1.25	.35	5	85	100	
Fla.	H. Hewitt	0	.12½		.75		1 00		0	100	80	100
Fla.	C. C. Cook		.07		.75		.92		5	90	90	90
Fla.	F. E. Munson	0					.75			100	125	100
Ga.	J. J. Wilder	0							15	80	90	10
Ida.	J. E. Miller	10	.08	3.60	.55					100	100	
Ill.	A. C. Baxter	25		4.00	.80	4 80	1.00	.25	2	100	65	40
Ill.	A. L. Kildow	10	.10	4.00		5.00	.75	.25			25	
Ill.	C. F. Bender	0				4.00		.25	3	90	25	
Ind.	T. C. Johnson	10			.80	4.80	1.00	.27	1	100	100	
Ind.	E. S. Miller				.80	4.80	1.00	.25	10	90	80	
Ind.	J. Smith	0					1.00	.35	25	75	100	
Ia.	E. G. Brown	10	.08½		.75		1 00		20	75	75	
Ia.	F. Coverdale	15			.60	4.50	.85	.25	3	110	100	
Ia.	W. S. Pangburn	40			.70		80	20		100		
Kan.	J. A. Nininger	5			.85	4.25			4	85	100	
Ky.	P. C. Ward	10					1.15			100	90	50
La.	E. C. Davis	10	.08½		.60		.85		10	100	100	75
Me.	O. B. Griffin	5								100		
Md.	S. D. Crocker, Jr.	5			1.00	5.25	1.35	.40	8	90	90	
Mass.	O. M. Smith	0	.11	5.25	1.00	5.25	1.25	.32	0	100	100	
Mich.	F. Markham	15	.11		.75		1.20		10	75	50	
Mich.	I. D. Bartlett	15	.09¾		.75	3.50	1.00	.25				
Mich.	B. F. Kindig	10	.11		.70		.90					
Mich.	E. D. Townsend.	40	.10½							100		25
Miss.	N. C. Jensen	10	.13½	5.00	65	5.50	.95	.30	2	60	100	
Miss.	E. W. Elam	7	.07		.75		1.00		5	90	90	
Mo.	J. H. Fisbeck	20			1.00		1.25	.30	0	70	70	
Mo.	J. W. Romberger			4.10		4.50	.90	.29	10	60	90	
Nev.	T. V. Damon	0	.09	3.25		4.25	1.00		5	90	90	
Nev.	G. G. Schmeis	0	.07½	4.25			.75	.27	15	75	100	
N. J.	E. G. Carr	0					1.25	.35	2	75	80	
N. Y.	Adams & Myers	0	.18		1.00	5.50	1.25	.30	20	70	125	
N. Y.	G. B. Howe				.75		1 15	.35				
N. Y.	F. W. Lesser	0	.10	4.00		4.80	1.00	.30	10	80	100	
N. Y.	R. B. Willson	2					1.00	.27	25		100	
N. C.	W. J. Martin	10	.10	4.50		6 00	1.25	.35	5	90	90	90
Ohio.	E. G. Baldwin	2							12	100	100	
Ohio.	F. Leininger	40	.08½						2		75	
Ohio.	R. D. Hiatt				1.00		1.35	.35	5	80	75	
Ohio.	J. F. Moore	25			.80		1.00	.25	5	80	90	
Okla.	C. F. Stiles	5			.80	4.50	1.10	.30	10	80	60	
Ore.	E. J. Ladd	15				4.75			2	100	100	
Pa.	D. C. Gilham	12			1.05	7.20	1.35	.40	35	80	80	
Pa.	H. Beaver		.11		.65		.80		25	80	50	
R. I.	A. C. Miller	0			.60		.95			100	100	
S. C.	A. S. Conradi	0						.35	10	100	100	
Tenn.	G. M. Bentley	0	.17½		1.00		1.25	.32		90		
Tex.	J. M. Mayes	1	.10						3	90	90	25
Tex.	H. B. Parks		.07½		.85				5	80	75	
Tex.	T. A. Bowden	0					.70		5	45	75	
Utah.	M. A. Gill	0					.60	.15	6	100	100	50
Vt.	J. E. Crane	10		5 00	1.25	5.50		.25	15	100	100	
Va.	T. C. Asher	0							3	85	90	
Wash.	W. L. Cox	45					.80	.25	12	100	95	
Wash.	G. W. B. Saxton	5	.09	4.00			.70	.20	5	100	100	
W. Va.	T. K. Massie	0					1.25	.30	8	100	5	
Wis.	N. E. France	15			1.00	4.80	1.25				90	
Wis.	E. Hassinger, Jr.	5			.80		1.00					100

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6. The solution comes in intimate contact with every part of a comb ever touched by bees.

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Address .....

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With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-frame.....$5.45
Standard size, crate of 5, K. D., 10-frame..... 6.15
Jumbo size, crate of 5, K. D., 10-frame..... 7.20
Shallow, crate of 5, K. D., 8-frame..... 4.10
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Hoffman Frames

Corner-cut top-bar.

Standard size 100, $5.45; 500, $26.25
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SPECIAL PRICES! SPECIAL PRICES!

Medium .....5 lbs., 65c lb.; 50 lbs., 60c lb.
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No. 1 style for 4¼x4¼x1⅞ sections, including section-holders, separators, springs, tins and nails.

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Hoffman & Hauck, Inc.

Woodhaven, New York

Benninghof Farm Italian Queens

(1) Production. (2) Gentleness (3) Color

AFTER thirty years of the successful production of honey and twenty years of the raising of the majority of our own queens, we are for the first time placing a limited number of queens of our own raising on the market. We have always kept a record of our best producers and from these we always bred. In checking up our records five years ago we noticed one strain in particular among our 900 colonies that not only that year but for the two years previous was far superior to the others in the production of honey.

We selected thirty of these colonies and moved them into a yard by themselves, and after another year of trial we selected five of the very best of these from which we started to breed, first moving all others out so as to insure that all the queens would mate only with the drones of these selected colonies.

The result was, after placing the daughters of these queens in colonies alongside others of the same strength and under the same conditions, their yield was from twenty-five to forty per cent more. In 1922 we used 1000 of these queens in our 1200 colonies as a further test, and they far outstripped the other 200 which we had bought and had bred from the best queens we could obtain on the market. We now feel safe in saying that we now have a strain of Italian bees whose queens are superior to any that may be purchased on the market.

The number of surplus queens we will raise and offer for sale will be limited, and all purchased from us will be equal to those we use ourselves, as we are not in the business of raising queens but are commercial honey producers.

The Benninghof Farm method of the producing and extracting of honey, together with queen-rearing, will be shown at the OHIO STATE FAIR, August 27-September 1.

PRICES: Untested—One, $2.00; six, $11.00; twelve, $21.00. Tested—One, $3.50; six, $19.50; twelve, $36.00. For fall requeening in lots of 50 and 100, on application. Breeders, $15.00, $20.00, $25.00.

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Ohio's Largest Commercial Honey Producers.

Root Quality Queens and Bees

Our Southern Queen-rearing Apiaries at Bay Minette, Ala., are under the direct supervision of our Mr. Mel Pritchard, who for years has been our head queen-breeder at Medina. We are in a position to furnish from Bay Minette, Ala., early-bred queens and bees, similar in quality to those shipped from Medina, Ohio, later in the season. **You need Root Queens to improve the honey-gathering qualities of your bees.**

QUEEN PRICES APRIL 15 TO OCTOBER 15.

Quantity:	1 to 9.	10 to 24.	25 to 49.	50 to 99.	Over 100.
D312000—Untested	$1.50 ea.	$1.40 ea.	$1.35 ea.	$1.25 ea.	$1.15 ea.
D313000—Select Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
D314000—Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
D315000—Select Tested	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

PACKAGE BEES.—Experience has taught us that two lbs. of bees in a package will ship better than a lesser or a greater amount of bees. It has been demonstrated that better results in honey producing are obtained from 2-lb. packages of bees than from three-lb. packages.

Prices of Bees in Two-Pound Combless Packages by Express—April 15 to August 15.

	1 to 9 pkgs.	10 to 24 pkgs.	25 to 49 pkgs.	50 or more.
D310800—2-lb. pkgs. of bees	$6.00 each.	$5.50 each.	$5.00 each.	$4.00 each.

Add price of queen wanted to package price given above. Large quantity lots quoted on application. These prices are F. O. B. shipping point. NOTE: Early spring delivery on package bees will be made from Bay Minette, Alabama. Beginning May 15, package orders can be filled from Medina.

The A. I. Root Company, West Side Station, Medina, Ohio

WOODMANS FAMOUS BEE-WARE

The Smoker

You Ought to Own

THE most important invention in bee-keeping, as little can be accomplished without the Bee-Smoker.

The **new Bingham Bee-Smoker is the most** efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

A. G. WOODMAN CO.

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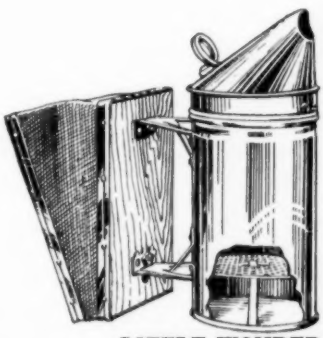
NEW BINGHAM BEE SMOKER

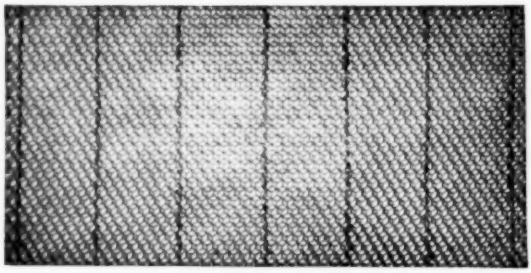
PATENTED

BIG SMOKE—With Shield Fire Pot, 4 x 10.

CONQUEROR. Fire Pot, 3 x 7.

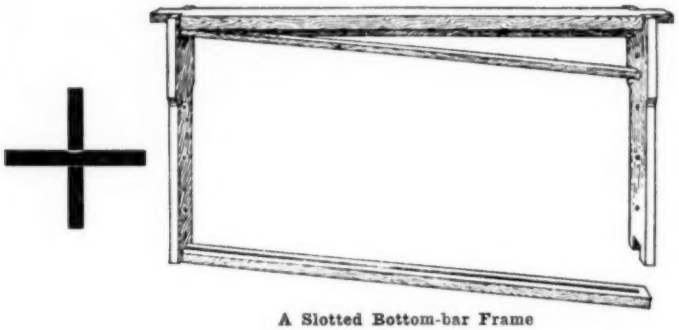


LITTLE WONDER. Fire Pot. 3 x 5½.

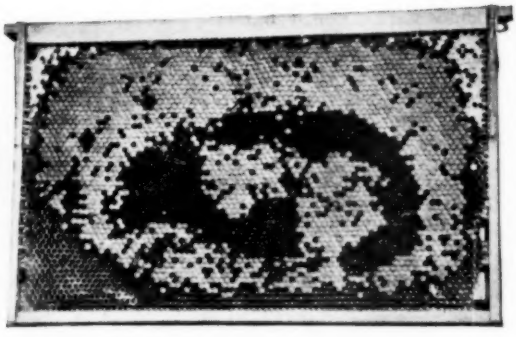


Dadant's Wired Foundation Makes the Hive Live Up to Its Capacity

A Sheet of Wired Foundation



A Slotted Bottom-bar Frame



A Full Comb of Brood.

CONSIDER THIS NOW WHEN EVERY NEW BEE ADDS TO THE HONEY CROP.

Dadant's Wired Foundation and slotted bottom-bar frames are sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders.

Dadant & Sons

Hamilton, Illinois

Makers of Dadant's Famous Foundation

Wired---Plain---Surplus

Beeswax. We need constantly large quantities of beeswax and pay good prices for it. We cannot use mixtures containing other waxes as they spoil the purity of our product. Ship pure beeswax to us at Hamilton, Ill., or Keokuk, Ia., or drop us a card and we will quote f. o. b. here or your station, as you wish.

Gleanings in Bee Culture

MAY, 1923

EDITORIAL

IN an interview with a newspaper correspondent, Dr. Harvey W. Wiley is reported as saying, "It is far better that the sugar speculators and refiners should gorge themselves on gold than that the nation should gorge itself with too much sugar." Evidently Dr. Wiley believes that the nation would be better off if more honey and natural syrups were used instead of so much refined sugar, for he says, "We have given our children natural syrup made from sugar cane and sorghum, as well as maple syrup and honey, which are natural sweets and which I think are far more wholesome than the refined white sugar of commerce." If this message of Dr. Wiley's could be driven home to the American people we would not see fine table honey selling at prices below that of sugar. This is a deplorable condition which surely can not last long.

Sugar Prices Do Not Disturb Dr. Wiley.

WHILE the legislators of most of the states have recognized the importance of passing laws providing for the inspection of apiaries in an effort to reduce loss from the brood diseases, beekeepers are calmly suffering a loss many times that brought about by the brood diseases, that can be prevented without legislation. Every year thousands upon thousands of colonies of bees are either lost or so reduced that they are of little or no value in gathering a crop of honey, because they run low in stores in the spring. In a large portion of the United States the month of May is the most critical time in this respect.

Great Loss From Lack of Stores.

It is not enough that the bees should have sufficient honey merely to live on during this month, but they should have a large reserve of stores to encourage the brood-rearing to the greatest possible extent in all localities where the honey flow comes on in June. If every beekeeper would see to it that every colony is rich in stores every minute of the time until the honey flow begins, the honey crop this season would be increased tremendously. There are not many things the beekeeper can do that will bring such great returns as colonies rich in stores during the six weeks preceding the main honey flow. The loss that comes from the brood diseases, serious as it is, really sinks into insignificance when compared with the loss in the reduction of the honey crop resulting from the bees' running short of stores in the spring. Colonies that have from three to five full combs of honey in reserve during the entire building-up period in the spring are the ones that forge ahead in brood-rearing even though the weather may be unfavorable. Lacking these the beekeeper should by all means feed his colonies liberally at this time.

BEEKEEPERS in the cotton belt, who have been much concerned about the use of arsenical poisons in which molasses is used as a binder to hold the poison to the plant in the control of the cotton boll weevil, should find considerable comfort in an article in the Dixie Beekeeper by J. J. Wilder. Mr. Wilder is located in the midst of the great cotton belt of Georgia, and depends upon cotton furnishing a large portion of his honey crop. He calls attention to the well-known fact that bees will not take the cheap molasses used in the arsenical mixture. They are, therefore, not attracted to the cotton field by the spray mixture, and do not visit the cotton plants until they are in full bloom, at which time the spraying is over.

Spray Poisoning from Cotton Fields.

While he admits that bees can be killed by the spray made of calcium arsenate and molasses he takes the sensible view that it is better to suffer the loss of a few field bees than to have the cotton industry destroyed by the boll weevil, thus

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eliminating one of his chief sources of nectar. He says, "I would far rather have the spray and the cotton than not to have either." If Mr. Wilder can go ahead producing good crops of honey in the midst of the cotton belt where the spray poison is used freely year after year, others should be able to do the same.

Alsike Clover More Profitable Than Red.

MANY farmers have hesitated to change from red clover to alsike clover on account of the prevailing notion that red clover yields a greater tonnage per acre than alsike. This was no doubt true while the farms were still new when good stands of red clover were secured year after year, but according to the findings of the Ohio Agricultural Experiment Station, alsike clover has yielded more tons per acre than red clover during the past ten years over which time the experiment was conducted. The ten-year average for the different kinds of clover is as follows:

Alsike clover	2.64 tons per acre
White sweet clover (biennial)	2.60 tons per acre
Mammoth red	2.29 tons per acre
Yellow sweet clover	2.12 tons per acre
Medium red	2.02 tons per acre

In the 41st annual report of the Ohio Experiment Station, the director comments on these figures as follows:

> The Station distrusted the outcome of these comparisons of red and alsike clover for a time, but alsike has led red clover so uniformly that it seems safe to publish these results. Alsike has led red in yield seven years out of ten and tied with red once, while red has led two seasons. Had a second cutting been harvested, the yield would probably have been more nearly equal. The fact remains, however, that alsike is much more disease-resistant than red; this was the deciding factor some seasons.
>
> Results of Ontario (Canada) experiments, published March, 1921, show alsike to have yielded 29 per cent more than red clover as a five-year average.

Reports of this kind, together with the constantly increasing difficulty in the way of securing a good stand of red clover year after year and the greater certainty of securing a stand of alsike clover, will no doubt have the effect of converting many farmers to the use of alsike clover instead of red in the regions where red clover has been grown extensively as a regular farm crop. In Illinois, portions of Iowa and Missouri, and the Missouri River Valley where red clover has not been used as a farm crop, sweet clover is now coming into general use in farm crop rotation. In the type of soil represented by the Missouri River Valley, together with a large portion of Illinois and Iowa, sweet clover is apparently at its best, while in the region of the Great Lakes alsike promises to become a leading clover in crop rotation.

Co-operative Marketing Associations.

THE Idaho-Oregon Honey Producers' Association was adjudicated bankrupt on April 6. This, together with the failure of the California Co-operative Honey Producers' Association about a year ago, leaves only two co-operative honey marketing associations now functioning in the West.

While some may be inclined to point to these failures as an argument against the co-operative marketing of honey, it is only necessary to point out in reply that hundreds of well-organized and well-managed business organizations have gone to the wall since the turn of affairs in 1920. Co-operative marketing associations, in common with other business organizations, have had a desperate struggle in keeping their heads above the water during the past few years. The Colorado Honey Producers' Association and the Texas Honey Producers' Association, so far as we know, came through the ordeal in good condition. The long and successful career especially of the former association is convincing proof of what can be done in the way of co-operative marketing of honey when conducted under good management, backed up by the loyal support of producers themselves.

Conditions in the western states are peculiarly favorable for co-operative marketing of honey since honey is produced in large quantities in several extensive producing centers and must be shipped a long distance to market. Western beekeepers should not abandon the idea of co-operative marketing because of these failures, but should build again when the time is ripe, being careful to avoid the mistakes made in the past.

One great difficulty in the way of co-operative marketing of honey is that beekeepers are inclined to expect too much of it, then become dissatisfied and suspicious when they find the sailing less smooth than expected. It must be remembered that it costs money to sell goods, that the best efforts of a capable manager devoting all or most of his time are necessary for success, and that strict grading is absolutely necessary. Careless grading or poor management is as fatal to co-operative marketing as to any other form of marketing. If the manager is capable but paid so little that he can devote but a little of his time to the business or if he lacks the full support and co-operation of the membership, success can not be expected.

THE discussion of the cause of swarming still goes merrily on in the various bee journals much as it has during the past 50 years. Some of the recent discussions go far afield into the realm of speculation concerning the source of the swarming impulse, which makes interesting reading but does not help much in reducing the beekeeper's troubles at swarming time. The Editor is so certain that the thing which calls forth the instinct to swarm has already been discovered that it seems many writers are going astray in going so far into the field of speculation when they might as well be dealing with well-known facts concerning this important question.

The Cause of Swarming.

In an article in the June (1922) issue of this journal the Editor set forth some of the evidence well known to every beekeeper, which indicates that the cause of swarming is a congestion of bees within the brood-nest, bringing to the colony a feeling of strength or a need for either expansion or division. In other words, the instinct to swarm is called forth because the distribution of bees in the hive is such that the brood-nest (not brood-chamber) becomes crowded even though there may not be many bees in other portions of the hive.

Colonies of bees do not swarm solely because they are strong. It often happens that the strongest colonies refrain from swarming, while medium or weak colonies make considerable trouble by swarming. The distribution of bees in the weak colony may be such that its brood-nest is crowded even though the remote portions of the hive are not occupied. On the other hand, the distribution of bees in a strong colony under good management may be such that only enough workers are left in the brood-nest to take care of the work there, in which case the colony has no occasion for feeling its strength or need for division.

While bees may swarm because the hive is too small, they do not necessarily refrain from swarming if the hive is large. A large hive affords a better opportunity for the colony to expand without bringing about a congestion within the brood-nest, but under some conditions a colony will confine itself to a portion of a large hive, become crowded and swarm even though there is plenty of empty comb in remote portions of the hive.

If a crowded condition within the brood-nest is brought about in weak and medium colonies by the bees confining their work to the brood-chamber, leaving the supers and remote brood-combs vacant and crowding the queen by surrounding the brood-nest with honey, the congestion is just as real and as effective in bringing on swarming as though the colony were strong. The remedy for this condition is better wintering and stronger colonies or a strain of bees less inclined to crowd the queen in this manner. If the congestion, discomfort and feeling of strength are brought about by poor ventilation or the hives being exposed to the direct rays of the sun, the remedy is easily applied. If the congestion is brought about by a large proportion of young bees which are inclined to stay in the brood-nest instead of going to the supers or the remote brood-combs, the remedy is to entice these young bees into the super by a set of attractive empty combs immediately above the brood-combs, being sure that there is no barrier of honey between the brood and the empty combs above, or by taking the combs of emerging brood out of the brood-chamber.

If the congestion is brought about by field bees remaining in the hive, as they sometimes do even when nectar is plentiful, because the hive is already crowded and uncomfortable, the remedy is to entice more bees into the super and make them as comfortable as possible, so that the field bees will go to the fields where they belong. If the congestion in the brood-nest is caused by field bees staying within the hive during the heat of the day because the flowers yield only during a portion of the day, because of weather conditions cutting off the nectar secretion or because of a few rainy days preventing the bees from flight, the remedy is more difficult; but even this condition can be relieved to some extent by providing more ventilation, raising the hive up on blocks if necessary to give a greater amount of room for the field bees under the combs.

If most of the bees can be induced to leave the brood-nest, going either into the supers or into the field, there should be but little if any swarming. The battle against swarming is nearly won if the beekeeper is able to bring about such a distribution of bees within the hive. Furthermore, these are exactly the conditions under which the bees work with the greatest spirit and carry in the largest number of loads of nectar during the day.

The article by Jay Smith on page 312 of this issue is another bit of evidence that faulty distribution of the bees within the hive is the cause of swarming. The plan there outlined should prevent swarming except possibly when the field bees are confined to the hive during the heat of the day by rainy weather or by erratic secretion of nectar, so that the flowers yield only a portion of the day. Under such conditions the field bees might so crowd the brood-nest as to bring on swarming.

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HOW TO PREVENT SWARMING

Operating Fourteen Apiaries for Extracted Honey with No Swarming

By E. D. Townsend

WE are told that, if we use a large brood-chamber and give an abundance of empty comb store room, swarming will be almost wholly prevented. Some say they do not get more than five per cent of swarms with this method of procedure, but if one uses the standard ten-frame hive, as most extracted-honey producers do, he is likely to get as high as 50 per cent of swarms. Since with us no one is at more than about two yards a day, a dozen yards would be swarming and "taking to tall timber" while we hived the swarms of the two yards. We tried this "let-alone" plan for several years. We were testing out a theory of keeping many more bees, and, by doing so, this larger number of colonies would in the aggregate carry more honey than fewer bees would work on a more intensive system with less labor for us. This theory did not work out well with the ten-frame hive, for we lost altogether too many prime swarms at just the time we needed the bees most to gather the surplus crop.

Our Latest Plan of Swarm Control.

Swarm prevention with us is very hard work and lots of it. One must remember that there is nothing acquired on this earth worth having, without great labor and fatigue, otherwise all would have luxuries without compensation.

If you follow us you must have a bee-veil, for you will be forced to work faster than it is practical to work with bees without face protection. None of us wear gloves. For those who are timid among the bees there would be no objection to the wearing of gloves, but I am sure they would be thrown aside, in a very few hours or days at most, as unnecessary. Swarm prevention and the giving of surplus room are done at one operation, so the two will be handled together in this article.

The upper stories given first have now been on perhaps two weeks, and the honey is beginning to show in the hives. Perhaps the bees have been getting honey for three or four days—not very much, but the prospects are that the season will be on in earnest in two or three days more. We now have before us three weeks of strenuous work, as our season for surplus does not usually last much more than three and a half weeks.

We work two crews of men, two to the crew, not counting the writer, who now does not pretend to do a man's work. Some one has said that "an old man's shadow is worth something in the beeyard," so I make the shadow every day through the season, and there are not many minutes of the day that some of the boys do not ask me what to do under certain conditions. I am here to tell you that, after 47 years of study of the business, I still make mistakes and see later where certain operations worked under my instructions would have worked out better if they had been done differently.

Some of our locations begin yielding surplus honey earlier and usually quit yielding before the later-yielding yards do. We know those yards and work accordingly. Each crew has seven yards to work each week, for we work a yard a day, and each crew has to manage to work in an extra yard each week; then if it should rain a day and put off work, queen-cells may be developing so we are likely to get behind a day now and then, for we must not be from a yard more than seven or eight days or swarms will be issuing. The work is about the same one day with an other, only at different yards. As we proceed surplus room is given much more freely during the first two-thirds of the clover honey flow than during the last third, and it happens many times that all the room needed is given the bees during the first two weeks of the honey flow, the third week being required to get finished what room the colonies now have.

I would recommend that you buy the best four-inch smoker you can find and a factory-made hive-tool. Those are two tools that you will use constantly and they should be the very best obtainable.

How Each Crew Works an Apiary.

The working season is now upon us, for some of the stronger colonies will begin to build cells for swarming almost as soon as honey begins to come in. The fact is, more swarming preparations will be found during the first part of the honey flow, before the bees settle down to work in earnest, than later. But do not think it will be easier later in the season to prevent swarming. It will not, for you will then have heavy supers to handle.

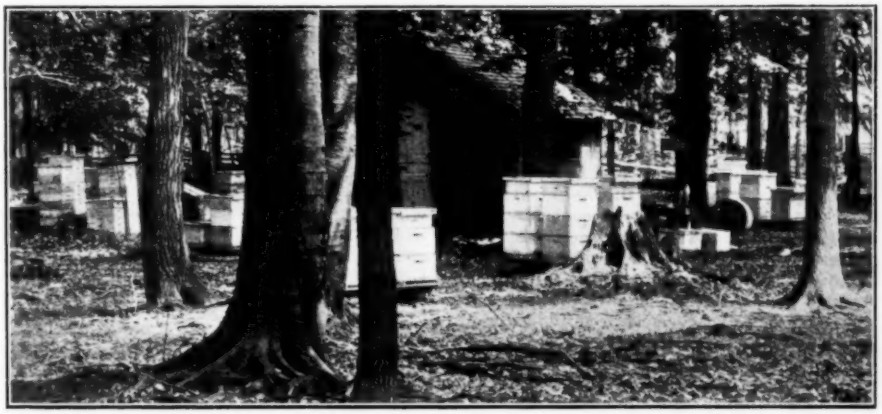
Each man takes a row of bees across the yard, and they work about as follows: Do not remove the cover, do not remove the food chamber, do not remove the extracting-super separately; but pry

them loose above the excluder, puff in a little smoke and lift them all three off at once and set them on an empty hive body near by. You will understand that the entire hive, for that matter, is very light as yet, and it would not be a heavy lift to take off the two supers and covers at one operation. Then this early in the season there may be some robber bees still prowling around, and keeping the supers covered will discourage robbing. Later in the season when the supers become heavy with honey, one super at a time may be all one cares to lift off; but the cover is almost always lifted off with the top story, as it saves one operation for each colony. Remove the excluder and look through the main part of the brood-nest for queen-cells, taking out one comb at a time and looking very carefully or one may be missed, which will spoil the entire operation as far as swarm prevention is concerned. One cell may be as bad as more, for the colony may swarm before you come to this back yard a week later. If we do not find queen-cells started for swarm preparation, the hive is closed and left for a week, since they do not likely need more room the first visit. All colonies in the yard are gone over each week as I have explained above, so you see we have before us three weeks or more of very strenuous work.

We will suppose we find some colonies at this first visit, or subsequent visits for that matter, that have begun building queen-cells preparatory to swarming. If there are but one or two cells started, and they contain eggs only, they are destroyed, and the hive is closed as if nothing had been done toward swarming; but the colony will be marked as one to look at carefully the next week, for most surely we shall find sealed cells the next week.

What to Do if Queen-cells Are Found in a Colony.

If we find queen-cell building in a colony, we can depend upon that colony's swarming unless treated. There may be exceptions, but they are so few that we cannot depend upon them. We swarm them ourselves, so to speak, about as follows: Find the queen, place her on a comb containing but very little brood, put her and the comb of brood in an empty hive body and fill in with empty combs if we have them; if not, full sheets of foundation will do. Remove the old brood-chamber, set this new one in its place, put on the excluder, then the upper stories and food chamber, and on top of all the old brood-chamber containing nearly all the brood, except the comb that is now with the queen below, and all the queen-cells. If any of the queen-cells are capped over, it is better to put an excluder just under this old brood-chamber, now on top, as a young queen will likely emerge during the next week, in which case it will be much handier to know where she is. This is the way we manage where we are making up winter losses or increase.



One of E. D. Townsend's 14 out-apiaries in Michigan. Note the food chambers have been raised up and the supers placed between them and the brood-chambers.

You will note that there is not much unsealed brood in this old brood-chamber at the end of a week after the old queen was taken from it, so about all the brood left will have emerged or be sealed. There will be but little for the bees to do, and positively no brood lost if we place this old brood, with either the virgin mentioned above or ripe queen-cells, on a new stand and allow them to build up for winter. Those having a large quantity of brood are divided, being sure that each half has a good, well-developed queen-cell, which is easily found among the natural swarming cells they contain.

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If one does not care to make increase from this brood, the queen-cells are destroyed when first placed above, for it should be known that once in a great while a colony will swarm where young queens are allowed to emerge above, though not so often but that we run the risk. We do not very often lose a swarm by so doing, and do gain time by allowing a queen to emerge a little earlier than if we break down the more advanced cells, as would be necessary to prevent a virgin from emerging before we come back a week later.

The Second and Subsequent Visits.

Thus, a week later, we have been over every colony in all the yards. The management during this second week of the honey flow will be the same as last week, with one exception, that is, the colonies that we handled to prevent swarming will have to be handled again this visit, and, quite likely, subsequent visits until the end of the honey flow, to make sure to prevent swarming during the honey flow, after which the swarming fever will pass off on account of no honey coming in.

We will now return to the colony we handled last week to prevent swarming. This time we do not look for the queen. There will be brood in but three or four combs. We shake the bees off from these few combs, including the queen, and place them with the brood we took off last week, exchanging combs of honey for those combs containing but little brood. These combs of honey are taken from above and placed with the old queen below. We leave a little brood with the old queen as at the previous handling, and they are in condition to work without swarming for another week.

How to Handle Colonies That Have Swarmed or Those That Are Superseding Their Queens.

In looking over the hives for queen-cells, we often find a colony superseding its queen. In such cases, when young queens emerge they are very sure to swarm if left alone. If we are in need of queen-cells, here are some as good as any to be had, with any method known. At any rate we see that there are no queen-cells left in the superseding colony when we close their hive. They will not swarm during the next week. A week later, tear out every queen-cell and give them a comb containing young brood. This process of breaking down cells and giving them a comb of brood must continue until the honey flow is over before a young queen is permitted to mature, which will prevent swarming for the season as far as that colony is concerned.

If the reader is not a better beekeeper than we are, some few colonies will get the start of him and swarm. Those colonies will later cast after-swarms if not promptly cared for. We proceed as we do with a superseding colony, that is, break down the queen-cells and give unsealed brood until it is too late for them to cast an after-swarm during the honey flow.

Giving Room During the Honey Flow.

During the first half of the clover honey flow, we aim to give about all the surplus room the bees will need to hold the crop. Then during the last half of the season we try to manage so there will be but few unfinished supers. In the production of extracted honey one should strive to have as much of the honey sealed as possible, about the same as if producing comb honey. However, as the supers are twice as deep as comb-honey supers, it is not always possible to do this, but one must try not to give too much room toward the close of the season.

It sometimes happens that we are undecided whether the colony under consideration will need more room than they already have, and, as we will not be at the yard again for a week, we set a super of foundation on top to be sure the bees will have enough super room. We have had colonies draw out this foundation to quite an extent; then, later in the season when they are finishing the supers below, the honey would be carried down and used in finishing. The super of foundation, now partly drawn out, can then be lifted off empty.

Northstar, Mich.

[It will be noted that Mr. Townsend employs a form of artificia] swarming, thus putting the colony in a condition comparable to a newly-hived swarm even though the removed brood is put back on the same hive. The brood or parent colony is separated from the new brood-chamber below not only by the queen-excluder but also by the supers, which are placed between the new brood-chamber below and the parent colony above. This is a modification of the Demaree plan. This, as well as other forms of artificial swarming in which the queen is left and the brood is taken away, is especially applicable in localities having a short, rapid honey flow.

In the intermountain region where the honey flow begins later and lasts longer, many beekeepers prefer to remove the queen and leave the brood, then later introduce a young laying queen. In the following article E. F. Atwater describes a plan for requeening and at the same time compelling the colony to establish a new brood-nest, both of which are strong factors in satisfying the swarming instinct.—Editor.]

PREVENTION OF SWARMING

How to Stop All Swarming and Put Bees in Best Condition for Storing

By E. F. Atwater

THE interesting editorial on page 506, Gleanings for August, 1922, "How to Reduce Swarming by Better Wintering" is right in line with our own efforts here, and suggests much of great value in attaining that much-to-be-desired end.

I discovered, many years ago, that more stores than usually considered necessary are of great value, and learned in a measure to deny myself the sale of a few tons of honey, in order that the bees might have the best form of insurance against loss or failure. As a result, during some favorable springs quite a number of colonies would prepare to swarm in fruit bloom, and such colonies are indeed "bonanzas."

On page 377, Gleanings of June, 1922, under the title, "Absolute Swarm Prevention," I described a plan which has proved of much value where extracted honey is the product, as we use this early building-up and those efforts at early swarming to do a lot of requeening.

Disadvantages of the Demaree Plan.

As written up by S. E. Miller and others, and as experienced here and in many other localities, there are times when a certain per cent of colonies, treated by the usual modifications of the Demaree plan, will start queen-cells on the frame of brood left below, or, that may swarm when young queens emerge from queen-cells on the brood above the excluder. Such colonies will not give as good a crop as would have been the case if the queen, when placed below the excluder, had continued to lay freely, and no "sulking" had occurred.

To overcome this serious disadvantage of the usual Demaree plan, I have practiced for some years, when the brood is placed above the excluder, replacing the old queen with a young laying queen, preferably reared above or below the treated colony with a wire-escape board between, the escape either being removed and the hole closed, or the escape may be closed with a cork.

How the Young Queens Are Reared in Advance.

When I find a colony during fruit bloom preparing to swarm, I am pleased; for such colonies, if of good stock, are money and time savers later in the season. Having found a colony at that time preparing to swarm, I place in each of several empty hives a comb or two of honey, one or more empty combs and a comb of brood, bees and queen-cells from the colony preparing to swarm, using all the combs of brood in this way.

You need not look for the old queen when making the nuclei. She will be in one of the nuclei, and that one will not mate a queen; but if you do see her, you can leave her with a frame of brood as a nucleus on the stand from which she came, or kill her if she is failing. We spend too much of our time hunting queens. It is better to establish a few more nuclei and save the time.

These nuclei in regular hives are placed on the stands of strong colonies, and a wire-cloth bee-escape board, prepared as above, is placed on top instead of a cover, and the colony which was moved back or aside to put the nucleus hive in place is now lifted off its bottom-board, and placed above the wire-cloth escape board. I have a 1¼-inch hole, closed with a slide or a button, on each hive, and this hole in the upper colony is now at the rear and constitutes the entrance. The field force goes back to the old location below and makes the nucleus strong, and such nuclei are very successful in mating these early queens.

Unless there is a heavy honey flow when the young queen in the nucleus emerges, I have not found it necessary to destroy all cells but one, to prevent this little colony from swarming; and perhaps they so seldom swarm because there are so many old bees, and only one frame of brood. If the old colony, placed above the escape, would have been in danger of swarming, there is now small danger until a much later date, since, having lost its field force at the time it was placed above the escape or soon after, the bees spend their time in recuperating their strength, and the queen soon lays even more freely than before.

Reuniting at Beginning of Honey Flow.

When the young queens in the nuclei are laying and the honey flow is at hand, leave a comb or two, with more or less brood, in the nucleus, fill out the hive with combs or frames of foundation as you have found best, removing the wire-escape board (which is no longer a part of the plan), place a queen-excluder on the nucleus, then, if your nights are warm, a hive or two of empty combs; and, finally, the colony which had been above the escape is placed on top of all, after finding and removing or killing

the old queen. If your nights are cool or cold as they are here, you will place this chamber of brood just above the excluder, and the supers of empty combs above all, to prevent loss of brood.

I cannot tell you that you need pay no further attention to that colony, as in some seasons and in some localities it is necessary to destroy all queen-cells which the bees may start on the brood above the excluder nine or ten days after placing it above the excluder; while in other localities or in other seasons there will be no swarming, even though queens emerge from the cells above. To prevent danger of having a young queen mate from the brood placed above, close the ventilator or upper entrance when you unite the nucleus and colony.

Caging Young Queen Before Uniting.

Heretofore we have had very little difficulty with the acceptance of the young queen by the now united colony, but in this past season we soon found that it was necessary to cage the young layer at the time of treatment, Demareeing, or uniting as you may call it, in a Chantry safe introducing type of cage, for too many would be killed by the old bees of the big colony during the first excitement following the union of nucleus and colony.

By my plan, you overcome the defects of the Demaree and other plans of raising brood. The nucleus and colony have the same odor, there is no "sulking" of either bees or queen, colony strength is maintained better than when the old queen is placed below the excluder, much of the work is performed before the rush season, and in my own experience such colonies, so long as provided with empty combs, will produce the maximum crop with no effort to swarm, and will go into winter in good condition as regards young bees.

Swarming Reduced by Adding Combs of Brood Early in Season.

To further reduce swarming during the honey flow by having conditions in the apiary similar to those which prevail after swarming is over, so far as requeening, etc., are concerned, take a frame of emerging brood from all medium colonies and add to the strong colonies, as often as this can be done without seriously depleting the medium colonies, up to fruit bloom or an equivalent period. This will insure many more colonies so strong that they will try to swarm during fruit bloom, when we shall have even more abundant supplies of fine natural queen-cells for use in my modified Demaree plan or some other plan of requeening.

This is an exceptionally bad location for swarming during the June honey flow, yet colonies so requeened with a home-reared young laying queen, when run for extracted honey will almost always go through the entire season without swarming, so long as they have abundant room to store. They will also be ready for any honey flow when it comes, and will go into winter in good condition.

Meridian, Idaho.

NEW SWARM PREVENTION PLAN

A Simple Operation which Largely Removes the Cause of Swarming

By Jay Smith

IN nearly all methods of swarm prevention, a demoralized condition is brought about, which in some cases is as detrimental to the colony as if it had been permitted to swarm in the natural way. Here is a method whereby the colony is not demoralized and by which the queen increases egg production instead of curtailing it.

One of the most effective methods has been that of lifting frames of brood above the queen-excluder, leaving one comb of brood below to keep the queen contented. If this is properly done it is an effective method; but what have you done to the colony thus treated? You have put the queen below in a one-frame nucleus, and her egg-laying has been greatly diminished. Some say that this does no harm, as the bees that would have resulted from the eggs laid by the queen would be too late for the harvest. In some cases this might be true, but in many it is not.

In fact, I have never seen a single minute in the year that I felt a colony was not so good as it should be, because it was too strong! Have you? 'Fess up now. Did you ever have some one come into your apiary and say, "That is rather a poor colony you have there for it is too strong?" Or, "You better requeen that colony for the queen is poor; they have too many bees?" Allowing for the wide difference of opinion among bee-keepers, you never heard a man say that, I am sure.

Strong Colonies Needed Throughout the Year.

We want colonies strong in the spring

so they can build up for the harvest. We want them strong during the harvest. We want them strong as the harvest is closing, to get the last drop that is possible, and if one is running for comb honey it is very necessary to have strong colonies at this time to finish sections. After the harvest we want them strong to get ready for the fall honey flow if there is one, and, if not, they cannot be too strong for winter. We want them strong in winter, as a large cluster has less surface exposed to cold than a smaller one in proportion to the number of bees, and so the cycle of strong colonies is complete.

Of course, there are times in the year when a colony is less injured by being weak than at others, but I believe there is never a time when a colony could be benefited by being made weaker. I realize some excellent authorities mention "useless consumers" at the close of the harvest, and in certain localities there may be such, but with me I never saw a time when I did not consider every bee in the hive was more than worth its keep. In midsummer when practically no nectar was coming in as all plants seemed dried up, I have noticed that the extra-strong colonies did not draw upon their stores as did the weaker ones, and in many cases they found a little dark nectar somewhere. I do not know where they found it and do not care much just as long as they got it.

The principal objection to the swarm-prevention method mentioned above is that it makes the colony weak at the close of the harvest. While few of the bees, that would have been reared had the colony not been manipulated to prevent swarming, would be old enough to be fielders, they could take the place of some other of the bees that could be fielders.

How then can we bring about a condition in the hive that will cause the queen to put forth her best efforts at egg-laying during the swarming season and have no desire to swarm? I have been experimenting upon this for several years, and thus far the plan used has worked to perfection with no swarm.

How a New Principle Was Discovered.

I have noticed for a number of years that when bees are taken from a strong colony for use in a swarm-box for starting queen-cells that colony keeps the brood-nest filled with brood; while colonies run for honey would fill the brood-chamber with honey, thus restricting the area of brood. Bees are taken from these strong colonies twice a week and kept in the swarm box about 28 hours. It seemed strange that taking bees away in this manner would keep the queen laying more than she did when the bees were left with her all the time. However, there is a reason for this apparent contradictory conduct.

By removing many of the nurse bees that are always hanging around the brood-nest, the remainder of the bees and queen probably concluded that the colony was not as strong as it should be, and the queen kept on laying in an attempt to get things packed full of nurse bees so they could have a good time swarming. Years ago when I was in the package-bee business, I also noticed that when part of the bees were removed the queen kept laying in an attempt to build up the colony. Now I wondered if a method could be found whereby the nurse bees might be enticed into the super and still leave the brood-nest intact, thus enabling the queen to push forward at egg-laying with no thought of swarming. The experiment I tried on a few colonies worked, so I tried it on a larger scale. Several extra-strong colonies that were building cells and preparing to swarm were used in the first experiments. Two shallow extracting-supers were set on over a queen- excluder. Then two frames of brood were taken from a weak colony, all the bees brushed off and these frames of brood put in the extracting-supers at the outside. This attracted the nurse bees upstairs and relieved the congestion in the brood-nest. All desire to swarm was eliminated, and the queen went ahead with brood-rearing. The colony was strengthened by having these two extra frames of brood. The fielders brought the honey up there, and the colony put forth its best efforts at honey-gathering.

How This Plan Prevents Congestion of Young Bees in the Brood-Nest.

Now this method may seem quite similar to the method of raising brood above the excluder from the brood-nest, but there are some differences of importance. When brood is lifted above from below, no extra work is given the nurse bees. They can crowd in the brood-nest just the same and in some cases will swarm. Again, you have taken the queen out of the brood-nest, and this prevents her from laying to the best advantage. In the plan I have advocated, the brood-nest is left intact, and the queen goes merrily on increasing her output.

How Both Strong and Weak Colonies Are Benefited.

You ask, "What about the colony from which you take the brood? Will it not be injured?" In most apiaries there are weak colonies that are not in the best condition to produce honey. They will many times fill the brood-chamber and swarm. This brood may be taken from them, and this will prevent them from swarming also.

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This system can be used with modifications as best suited to the beekeeper. All brood can be taken away from weak colonies that have old queens. This will prevent their swarming and also stimulate these old queens to lay to capacity to build up the colony. Later, these colonies can be requeened. While this may seem contradictory it is nevertheless true that, by making one colony weaker and another stronger, the queens in both are stimulated to greater activity and swarming is prevented in both.

This past spring was the worst for swarming of any that I ever remember in this locality. The weather was fine during peach, pear and apple bloom, so that when the clover began it acted like a finger on a hair trigger and touched off the colonies into swarming at a furious rate. I took a small experimental apiary of 24 colonies, all in Jumbo hives, into the center of a 300-acre patch of sweet clover. Before taking them there I treated them as I have described. Just as the swarming season was coming on, I gave each two shallow supers with two Jumbo frames of brood from other colonies. Two days later, upon examinining them I found that they had destroyed their drones, while others that were not treated were building queen-cells preparing to swarm. None of these 24 colonies showed any inclination to swarm during the rest of the season.

Vincennes, Ind.

INCREASE AND LOCALITY

Some Variations in Behavior of Bees and Their Reasons

By E. F. Phillips

ONE often hears of a beekeeper in the North who buys a two-pound package of bees with a queen early in the spring, and the colony produced from this small start yields a large crop of honey the same season. There also occasionally but less often appear reports of a beekeeper who divides a strong colony into perhaps eight or ten nuclei in the spring and at the end of the season has an equal number of strong colonies, some of them even having produced a little surplus. From stories such as these it would appear that artificial increase is one of the easiest problems in beekeeping and that no special discussion should be necessary. All beekeepers do not find it so easy, as attested by the large number of articles that have been written on the subject. Here the old and much abused term "locality" seems to come in for consideration more than has been recognized, and the problem is certainly not always so easy as might be supposed from a reading of the striking examples.

Differences in Honey Flows North and South.

As one goes northward the spring and fall honey flows come closer and closer together, until in the far northern parts of the region adapted to beekeeping there is almost a steady honey flow from the beginning to the end of the season. Going southward, these two periods of nectar-secretion are gradually separated, until in the South there is usually a long period of dearth in midsummer. This variation arises from the fact that nectar secretion is less abundant or entirely lacking when the day and night temperatures for a considerable period are high, and the best nectar secretion from all species of plants, so far as known, occurs when there is a decided contrast between day and night temperatures, and especially when the night temperatures are rather low, as in the North, at high altitudes in arid regions and in early spring and late fall in the South. During the period of high temperatures, during midsummer in the South and central states, little nectar secretion may be expected, especially from native plants. It therefore appears that, were it not for the severe wintering problem, the ideal place for beekeeping would be the far North. Of course the actual period when the weather is warm enough for nectar secretion and for its gathering by the bees is somewhat shorter in the North, but the total amount of nectar secreted and available to the bees is usually greater in the North than with the longer seasons in the South.

Colonies Reach Greater Strength in North Than in South.

In the strengthening of weak colonies, such as those made for artificial increase, the rapid development of the population is directly correlated with the intensity and regularity of incoming nectar. It seems almost paradoxical that colonies of bees in the tropics are usually less strong than are those of the North at the time of the first main honey flow, yet this fact has been attested by numerous observers. One might speculate on theoretical grounds that in the tropics, where the bees can fly daily, they would increase in strength until the colonies were of

enormous size, unless again reduced by natural or artificial increase. It is, however, well recognized that swarming is less intense in the South and in the tropics. Several factors are here involved, but this fact leads one to suspect that there may be something wrong with such a speculation concerning what colonies of bees should or might do in hot climates. The spring development of the colony depends more than anything else on the intensity and persistence of nectar secretion, and such an ideal condition as would for the rapid development of small nuclei be desired is found rarely in torrid climates. One should not, therefore, be surprised to see the average run of colonies in hot climates lower in population than in the summer in colder regions. Where the honey flows are sporadic and intermittent, there is a tendency for a weak colony to remain weak much longer than is the case with a heavy, long honey flow.

The above facts regarding nectar secretion and the character of the honey flows are an adequate explanation of the facts as usually observed, namely, that in the warmer climates there is much less tendency for very weak colonies to become strong in a short time than is the case in the far North. The beekeeper of the middle or southern latitudes of the eastern states, therefore, usually finds it impracticable to make increase as rapidly as can the beekeeper in the North. He usually finds it desirable to make nuclei for artificial increase somewhat stronger than is absolutely necessary in the North, thus giving the nuclei a better chance to reach full colony strength in time to go into winter quarters. He also finds that artificial stimulation or more stores left with the nuclei are points of greater importance than they are for his northern co-worker. He may even, from his own experience, be inclined to disbelieve the tales about rapid increase of pound packages or nuclei which are from time to time published. It will, of course, be understood that in parts of the West where, because of favorable climatic conditions, rapid honey flows occur much farther south than they do in the East, one must interpret these facts accordingly.

Better Management Needed in Middle and Southern Latitudes.

These variations have a bearing on certain other beekeeping practices which are concerned with the rapid increase in colony strength. It is, as has been stated, usual for bees in the tropics permanently to remain weaker than do those in early summer in the most northern parts where bees are kept. Colonies in hot climates often get weak for some reason and then stay weak for a long time. Similarly there is a tendency for bees half way between these two extremes to become weak and not build up so rapidly as do bees in the North. It not infrequently happens that a beekeeper of the middle latitudes of the East has colonies that are too weak year after year without realizing that they are not so strong as they should be, or so strong as they would become in the North without his help.

Since it is now universally recognized among good beekeepers that strength of colony is the most important factor in large crops of honey, and that strong colonies should not be divided by natural or artificial means just before or during the main honey flow, then it follows that a beekeeper of the middle latitudes or of the South has a far more difficult problem in bee management before him than is commonly recognized. This is especially true because in mild climates most beekeepers leave the bees alone more than is possible for the beekeeper of the North, and the traditions of beekeeping of these regions are usually not such as will lead to extreme care in obtaining colony strength. The wintering phase of the problem is made considerably more difficult because of the poor character of the winter stores almost throughout the middle and southern latitudes.

It is rather significant that during the past two decades, during which strength of colony has been specially emphasized, the outstanding developments in beekeeping have occurred in those parts of the country where bees become exceeding strong more or less of their own accord if they are given protection, stores and room. For a comparable advancement in the warmer parts of the country, greater care will be required, in order to induce or to stimulate the bees to do what they do of their own accord with half a chance in the North. It may in some degree be necessary to work out special methods, for the properly advocated "let alone" spring manipulations of the northern beekeeper may not answer the full purpose farther south.

Too often beekeepers of the middle and southern latitudes permit their colonies to become weak in winter from lack of care, and then they may stay weak year after year without the beekeeper's realizing that they are below par. Perhaps most of the bees in his region are in the same condition, so that he does not see this weakness by contrast. Since there is not any definite and commonly recognized standard by which a beekeeper may determine whether his bees are at full strength, such a beekeeper may never

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realize this from reading and perhaps not until some northern beekeeper sees his bees and expresses surprise at the weakness of the colonies.

Judging a Locality by Response of Bees in Making Increase.

The subject of increase was chosen for this discussion because the behavior of the bees in responding to the making of increase seems to be one of the best ways of determining whether the bees build up readily in a region. Wherever the beekeeper finds this a relatively slow process, this should be an indication to him that exceeding great care is required for him to get his colonies to full strength in the spring, and he should plan his methods and work accordingly. Because of the erroneous tendency for the beekeepers of the middle and southern latitudes to believe that wintering is to them a problem of minor importance, it may be well to urge that such beekeepers read, study and practice the methods of wintering which are found successful in regions much farther north, for such methods should be helpful almost to the Gulf.

It would be quite possible, were it not for the danger of introducing a subject somewhat foreign to the present discussion, to continue with the essentials of wintering everywhere. These have been discussed in great plenty. One essential which is often neglected, especially in the middle and southern states, is that of getting a large force of young bees before the bees discontinue brood-rearing in the fall. Without this there is little hope in these latitudes of getting a full colony before the time of the main honey flow of the following season, so that this becomes an outstanding requirement for beekeeping success in this great portion of the country.

Washington, D. C.

EXHIBITING AT THE FAIRS

The Material for an Attractive Exhibit Must be Provided in Advance

By Josephine Morse

TO get up a successful and original exhibit at a fair, the exhibitor should begin thinking about it, at any rate, several months beforehand. By the word "exhibit" I mean a general exhibit of bees and honey, or some special class for some other product of the apiary—such as one showing the production and molding of beeswax. An exhibit of 50 pounds of extracted honey, for instance, would not fall in this category, as the entry would be all on hand at the proper time without any planning beyond the securing of the particular honey crop desired and the necessary preparation for exhibition. But a varied and interesting exhibit, which will not only catch the spectator's eye, but cause him to stop and ask questions, takes time, thought and labor to prepare.

My idea of a prize-winning general exhibit is not a tremendous stack of extracted honey, a smoker, frame of bees and a few photographs of one's self in his apiary, all rather promiscuously scattered about on the table, but an exhibit which is well ordered and balanced—small things in front and arranged in groups, with the big things like hives, bee-trees, etc., forming the background.

Careful Plans Should be Made in Advance.

The first thing to do is to find out, if you don't already know, just how much space will be allotted and what are the facilities for exhibition — whether the tables are against the wall or whether there will be passing on two or more sides. I prefer space against a wall, as it is easier to arrange an effect to be seen from one side only, and an effective background will set off the display. Ordinarily one doesn't have to plan to fix the exhibit so it will look well from more than three sides—usually one is the rule, sometimes two.

Early planning is necessary so that the materials may be gathered together during the summer. When, at extracting time, you come across a particularly thick, white, well-sealed comb of honey —either a shallow or deep frame—save it, for nothing is more attractive; and when you have a little spare time, make for it a case with glass sides. If it isn't encased the temptation will be too great; some finger will dig in, the perfect honeycomb will be gouged and marred, and honey will drip down on the table.

Section honey should also be shown in a case. The illustration shows a case made by Clesson Merriman of Leominster, Mass., which he had at the 1922 New England Fair. It is effective, attractive and original. Comb honey should be clean and white, free from travel-stain and propolis, capped to the edge and uniform in color and appearance.

It will be worth while, too, to save especially fine, large queen-cells, for when labeled they always interest peo-

ple. One feature of the exhibit might be honey of different shades, tiered up in some sort of pryamidal form, with the darkest at the bottom and the lightest at the top. This could either be in the center or there could be two piles, one on each side of the center.

A frame of bees in a one-frame observation hive, neatly made, should be screwed to the table or placed where it can not be reached and tipped over. Select a comb showing eggs and brood in all stages—some emerging—pollen, sealed honey, with queen, workers and drones of pure strain. Be sure there is plenty of honey in the comb so they won't starve or become demoralized on account of lack of stores. A dark old comb will be best and will stand transportation.

See that the shelves, stands, etc., are all neatly covered with clean white paper. This is especially important behind honey in glass, bringing out the color and clarity to best advantage. Tack the paper down firmly over the edges so it won't get torn by the people pushing by.

Honey Plants Add to Effectiveness.

Some honey flora, such as tall spikes of goldenrod or showy branches of sumac, will add to the decorative effect. Flowers of that sort look better when placed at the back or sides of an exhibit than in the center, unless they are very lonely and do not hide the view of anything else. It always hurts me to see flowers crushed together and crammed down into a vase, as if the whole idea was to get as many together in as tight a bunch as possible. They look lovelier and more natural if comparatively few are put in one container and those few arranged loosely and gracefully, as they always are when growing. When they wither and droop remove them, for they then detract from the effect. Practice arranging the exhibit at home beforehand as far as possible, or sketch it out on paper so that the materials are well balanced and can be quickly put in proper relation to each other when the time comes actually to set them up.

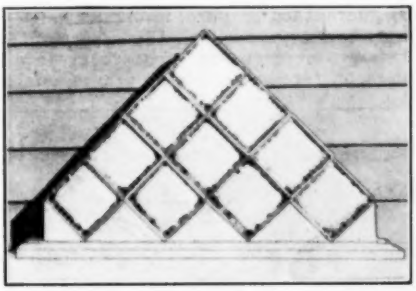
Value of Order and Neatness.

I remarked once to a beekeeper friend that I could not understand why more beekeepers do not exhibit at fairs, even though they themselves do not have time enough to do all the work and planning. Their women-folk (this presumes the beekeepers are men—as most of them are!) ought to be able to help them so much in getting things together at least, and arranging them at the fair. His reply was:

"Beekeepers' wives! Don't you know they're all sick to death of the very sound of the word 'bee'?"

Perhaps most of them are, but I still think the women relations—whether wives, sisters, daughters or mothers—could do a lot more in this line than they do at present. Women are popularly supposed to have a sense of order and neatness—also good taste. Here is a chance for them to apply these qualities and show that this popular supposition is true.

And why aren't they interested? It is tremendously interesting to get your best apiary products together, display them with care and consideration, and then see what your fellow-competitors have brought and how they are displaying. Then to find out the judge's decisions, and after he has given the awards, he will usually, if asked, tell how he scored



An attractive case for exhibiting comb honey at fairs.

the points and wherein yours excelled or was deficient. In this way you can get many ideas as to what is effective, how to select material, prepare it, and so on—to say nothing of the meetings and talks with other beekeepers one is sure to find lingering about this section, drawn to it as surely as are bees to honey!

You learn what is required to secure a blue ribbon. That it is essential for the honey in separate classes for the extracted variety, to be of fine flavor, clear, thick, of the color specified (and that alone may mean a whole lesson in the grading of honey for color), well strained and in bright, clear white jars. The quality of the honey should be uniform, also the containers. Comb honey of A1 quality should be capped to the edge if possible, free from stain and uniform in appearance. Honey vinegar must be strained a couple of times through filter paper so as to be good and clear, but the color is not so important as the taste. It must have a good, strong vinegar taste, neither weak and flat, nor very bitter. Beeswax is preferable when light and clear. Molded carefully, it makes an attractive part of a general exhibit.

Mounted Flowers Call Attention to Source of Honey.

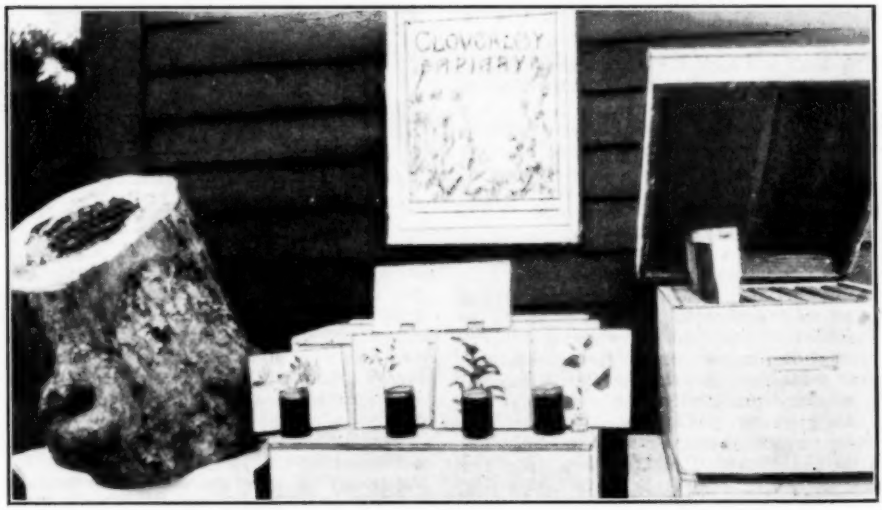
At the New England Fair in Worcester, Mass., and at the Waltham Fair two

years ago I had an exhibit which attracted a good deal of attention and received many favorable comments. The space allotted was against the wall; about six feet long by four feet wide. At the back on a shelf six inches high, made of inverted boxes covered with white paper, were ranged in the following order from left to right, a section of a bee-tree (tilted forward to show the combs), an old-fashioned straw skep (homemade), a box hive and a modern hive—all representing "The Evolution of the Hive." In front of this was a series of 4-ounce glass jars containing different varieties of New England honeys, which I had spent some time and correspondence in securing. They could be guaranteed as pure, unblended honeys from the sources which they represented. A few were from my own apiary—apple blossom, for instance—the others coming from Maine, Vermont, Massachusetts, Rhode Island and Connecticut. All were from beekeepers who could vouch pretty surely for the source.

When the first apple trees bloomed in the spring, I began collecting samples of the different flowers which produced these honeys. These were pressed and mounted on glossy, white cardboard squares, measuring 4 x 5 inches and were placed upright in little blocks of wood cut with a groove, slanting slightly forward, into which the cards slipped and were held nearly upright, each flower close beside its own jar of honey and each labeled with its own proper name. Apple blossom, blueberry, linden, alsike clover, clethra, goldenrod, buckwheat and sumac were all there, making an interesting collection, easy to see and compare.

It was also distinctly an educational feature, not only for the general public but for many beekeepers as well, who do not know the characteristic colors of the honeys from different flowers visited by their bees. The mounted flowers kept their color very well and were distinctive in appearance. This was the real feature of the exhibit, on which I had spent a good deal of time at odd moments; gathering the flowers as they came along and pressing several specimens of each to be sure to get one good one to use. It meant thought and planning beforehand but the results were very satisfactory.

Directly in front of these jars were several small cakes of clear, light-yellow beeswax made in as pretty molds—small scalloped muffin tins, etc.—as I could find. Flanking these on each side toward the back was stacked light amber extracted honey in one-pound glass jars. On one side, a little farther forward, was a one-frame nucleus of Italian bees; on the other side a beautiful big comb of honey, capped very white. Besides these, there were a small group of candied honey, fruits preserved with honey, a quart of honey vinegar, beeswax, candles, etc.



The exhibit is set up at home in order to study the effect and to perfect the arrangement.

Labels and trade names are often not allowed, but they were in this case, so overhead I hung my apiary poster—a blue sky with bees working on pink and white alsike clover blossoms, nearly life-size, and "Cloverley Apiary, South Lancaster, Mass., printed below in gilt letters. This helped to complete the general pleasing effect and hinted at the beauties of the industry.

South Lancaster, Mass.

FROM THE FIELD OF EXPERIENCE

SELECTING BREEDING QUEENS

Beekeepers Need the Aid of Science in Improvement of Stock

In looking through what has been written in the apicultural press on the proper selection of breeding stock in queens, as far as my reading is concerned the available material is pretty meager, and when we take what has really made an impression upon beekeepers there is still less. The vast majority of the matter published is confined to selecting a queen from the colony which has gathered the most honey. The mere fact that a colony has given a large yield of honey does not prove that the queen that produced the bees is the most desirable queen from which to breed.

The truth is that the ordinary busy (or not busy for that matter) beekeeper cannot form a proper estimate of desirable traits as they are beyond his powers of calculation, and I am of the firm conviction that government experts with delicate instruments should be available and ready to help either the commercial queen-breeder or the honey producer in the selection of breeding stock.

When we look at the results obtained from selection we have thus far not had more than a ripple on the water, and perhaps not that. During a certain year I bought 100 queens from four noted queen-breeders. One thought he had a strain that would gather about two pounds of honey to other people's one. Another told me that, if 70 colonies headed by queens I bought from him did not gather as much honey as 100 colonies of other strains, he would give me the queens. The result was that, taking the average yield of each lot, there was no difference. This was the unanimous verdict of the students and men who were working with me. In 90 per cent of the cases I could tell whose queens headed the colony, by the build, behavior and coloring of the Italian bees.

The points I would consider in selecting a queen or queens for breeding purposes are as follows:

1. As far as can be discovered, purity of strain. The more fixed the strain, the more likely the characteristics are to be transmitted.

2. Prolificness of the queen during her past life. For instance, a queen may head a colony which is not numerically as strong as a colony headed by a young queen; but she may be a queen failing on account of age, though much more fruitful at some previous time. This older queen is as capable of transmitting her good traits as when she was younger; or, on account of that which brings about supersedure, honey gathering may be affected. It is also well to remember that there are lots of queens that do not have a fair chance, because many of the cells which constitute the combs are not fit for worker brood.

3. Non-swarming tendency. At the same time owing to less shade from the hot sun, having been given room later than other colonies, or swarming resulting from supersedure—to say nothing about difference in ventilation—queens may appear to be of an undesirable strain when they are not.

4. Longevity of the worker bees.

5. Flying strength. This difference is well illustrated in Carniolan bees as compared with Italians and blacks. One objection that has been raised against Carniolan bees is that when they swarm they stay so long on the wing. This, undoubtedly, is on account of the greater wing power of the Carniolan bee.

6. The amount of honey a bee can carry at a load. This can be determined by catching bees at a uniform time and weighing the honey sack with its contents.

7. Tongue reach.

8. Well-fed larvae. Bees vary much in this respect.

9. Quiet action on the combs, summer and winter. Excitement is never conducive to longevity.

10. Immunity to European foul brood and other diseases. Always remembering that a colony which quietly pulls out a lot of young dead larvae is not necessarily immune to European foul brood because we do not notice them dead in the cells.

11. The ability to keep the combs free from bee moth larvae.

12. Wintering.

13. Defending the hive.

14. Perhaps the size of the bee.

If the above points are well taken then it is a much more complicated matter to select breeding stock than we have thought, and in some respects the ability to select is outside the power of anyone but a scientist; in fact, science and practical experience should co-operate.

R. F. Holtermann.

Brantford, Ontario, Canada.

DISINFECTING SOLUTION

Sodium Hypochlorite and its Use in the Treatment of American Foul Brood

In view of the editorial in the March issue of Gleanings in Bee Culture, I think that a statement concerning our results with sodium hypochlorite will be appropriate at this time.

Sodium hypochlorite is a well-known treatment against bacteria, so that we have contributed nothing new in this respect. The credit, if any be due for the suggested use of sodium hypochlorite for foul brood diseases of bees, should be given to Mr. Lewis of British Columbia.

As for our work with the sodium hypochlorite known as B-K, we can only judge by the apparent results secured. The article was published not with the idea that every beekeeper should immediately start to use the remedy, but rather with the idea of getting others to try out sodium hypochlorite solutions in the treatment of the brood diseases. Our first experiments proved to me that both of these solutions will not only destroy single spores of American foul brood, but that they will dissolve the scales in combs and kill every spore present. Furthermore, these tests show that in solutions of honey or sugar syrup the spores are killed, and the treated honey can be fed to bees without apparent injury to them.

During the entire winter we have been conducting experiments in the University bacteriology laboratories and working with American foul brood scales. One of our graduate students, H. G. Ahrens, working under the direction of the bacteriologists, has carried on a number of tests which show that the scales are dissolved in sodium hypochlorite in a few hours and that within 24 hours the spores are killed. Upon the basis of the results secured from these investigations I believe that it is proper to advocate the use of sodium hypochlorite in certain phases of American foul brood prevention.

If our foul brood laws were so arranged that every colony affected with American foul brood would be destroyed as soon as the disease appears, we would soon have no disease to combat. However, such is not the case, and many of our very best beekeepers continue to harbor the disease because of their attempts to save extracting-combs and other material. Now, any added precaution, which will help to cut down the amount of disease, is worthy of our attention. Those beekeepers who suffer from their careless neighbors are likely to be benefited most by any method which helps to destroy sources of infection. I believe that the liberal use of an efficient sterilizer around infected apiary buildings, equipment and honey will aid greatly in keeping down the disease.

It is, however, foolish to suppose that because the beekeeper has the remedy on hand his troubles are over. Just as much care will be needed in the handling of infected honey and equipment as before, but the beekeeper can be absolutely assured that he has disease-free equipment if he thoroughly sterilizes with an efficient solution of sodium hypochlorite.

As to the exact details to be followed in the application of this material and the greatest dilution at which it can be used with safety, these still require further experimenting. These things should be held in mind by all those who are interested in this work.

Someone may, in the future, find a remedy which will keep down the disease when fed to the bees in an infected colony, but the conditions within the hive seem to be decidedly against the success of such a treatment.

Sodium hypochlorite will dissolve American foul brood scales and destroy every bacterium in a comb unless in honey sealed over with wax, but the cost of material is too great at present to make the practice of treating such combs practical. Dry extracting-combs can be sterilized so that they are free from contamination; but, if a single sealed cell of honey is left in the comb, it will be sufficient to carry the infection over, and the good of the treatment will be lost by this small act of carelessness.

Madison, Wis. H. F. Wilson.

A TRICK OF THE TRADE

How to Find the Queen in a Colony of Blacks

It is probably well known that C. L. Sams, bee extension agent for the United States Government and for North Carolina, is an authority on the handling of black bees. He certainly knows how to transfer them from the old log gum to the modern hive—a method that has been already described in these columns.

While I was in North Carolina last summer he requeened six powerful colonies of black bees in the incredibly short space of 30 minutes. To find the black queen in a big colony of blacks is no small job, because the individual members of this race are so much inclined to run in a mad scramble all over the hive and combs that it is next to impossible to find the queen. I have known three or four beekeepers to spend half a day in trying to locate the queen in a black colony for the purpose of replacing her with a good Italian. When, therefore,

Mr. Sams promised to show me how this "trick" could be performed in minutes where it took hours in the old way, I was naturally interested. The plan can be worked in the case of any strong colony, whether Italians or blacks; but it is especially applicable to the latter race.

Here is the trick, or, rather, here is the way he went about to requeen six colonies of black bees with three supers on each, in the short space of 30 minutes. After smoking the bees through the entrance enough to start them upward, he began drumming on hive No. 1 for about one minute. He next drummed on Nos. 2, 3, and so on. After he had drummed on all the hives thus, he came back to No. 1 and went through the same drumming process a second time. He then came back to hive No. 1. He placed a queen-excluder between the top and the lower super in each one of the six hives. He then removed the cover from hive 1 and pulled out the first frame, looked it over a moment, and then shook it in the super. This he did with all the frames, the whole operation taking hardly more than a minute. He looked down on the perforated zinc, when, presto! there was the queen on the queen-excluder trying to get down. The "trick of the trade" lies in the fact that the drumming process drives the queen—especially a black one—up into the top super with the bees. Before she can go back he traps her in the top super with a queen-excluder. After the drumming, the bees begin to work backward into the lower hive; but the queen, of course, will be held above.

After looking for the queen and pinching her head he placed an introducing cage with an Italian queen between a pair of the lower set of combs, then put back the supers. This he did with all the six hives; and when he had finished the job he had actually requeened the whole six in half an hour.

When I asked him if he could do this with Italian queens he said he could, but it takes a little more drumming to start the yellow bees and queen into the super.

Mr. Sams explains that in some cases it is not necessary to use a super of combs, because the bees and the queen can be driven up on foundation. In one case he used a full-depth Langstroth super with the combs. In the three cases described he used shallow-depth supers with drawn combs.

It is, perhaps, unnecessary to explain that a colony of black bees in a log gum or box hive can be requeened in precisely the same way, and just as quickly. All that is necessary is to nail a couple of cross-cleats across the bottom of the box hive or log gum, turn it upside down, put a super or hive with frames of foundation on the cleats, after which drum the bees and the queen into it. This done, put a queen-excluder under the new hive or super and proceed as first directed. If one were proposing to requeen when the colony is four or five stories high the queen would be driven into the top story; but the taller the hive the more drumming would be required, especially if Italians were used.

Newman I. Lyle, extension agent of Iowa, practices a method for requeening that is much the same, and he has repeatedly demonstrated that it works with both Italians and blacks. E. R. Root.

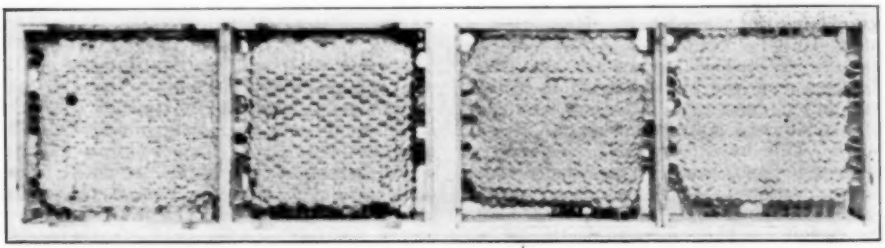
A large earthenware jar with cork floats makes a splendid arrangement for watering bees. Water in the apiary saves much wear and tear on the bees if they would otherwise have to go far for water.

FOUNDATION IN SECTIONS

Right and Wrong Way to Hang the Sheets of Foundation

Foundation should be fastened in sections so that parallel sides of the cells are horizontal instead of vertical as they are in the brood-frames. In other words, the end of the sheet as it comes from the factory is fastened to the top of the section, while in the brood-frames the side of the sheet is fastened to the top-bar. When foundation is fastened in this way the bees build the comb down to the bottom of the section much better than when fastened the wrong way.

Geo. S. Demuth.



Left, two sections with foundation fastened right way. Right, two sections with foundation wrong way. Note tendency to leave space below the comb when foundation is put in wrong way.

IS THE QUEEN TO BLAME?

Why Breeding Queens are Sometimes Superseded Soon After Introduction

When a colony is weak and backward in building up during a fair honey flow (say, a good colony in a scale hive is giving one pound a day) and the queen does not lay much, I used to condemn the queen, and I would requeen any such colony. Now, I make a practice of giving it all the emerging brood it can take care of until it is a good colony of bees. Then one of two things will happen. Either the queen will lay eggs as fast as the brood emerges or the bees will supersede her on short notice.

I generally find the queen is a good one and will keep the hive supplied thereafter. It is my opinion that the trouble is with the bees and not with the queen in most cases. Generally the bees have been weak in number for some time, and those now in the hive have been poorly nursed and lack vitality.

It is my opinion that most of the trouble of sending breeding queens by mail is due to the fact that the queen is exhausted in the mails. The most natural thing for a beeman to do is to introduce her to a weak colony of bees or a strong nucleus, and then give them lots of emerging brood. In many cases the bees will supersede her before she rallies from her trip, as they think she is worthless when she might be an A1 queen.

Riverside, Cal. R. Powell.

THE FOOD CHAMBER HIVE

How it Solves Many of the Beekeeper's Problems

It now looks as if the big hive question is settled in the standard ten-frame hive and food chamber. Some 20 years ago I kept bees in a locality where the early bloom, such as willow, was very plentiful, generally yielding so bountifully that super room was given and 20 pounds or so stored per colony. This super of honey was almost always left on to be used by the bees until apple bloom or clover.

The colonies were run for comb honey and the first super was filled with bait combs. I want to tell you right now those colonies were always big ones when the clover harvest began. Why? Because they had plenty of stores just above, where they like to have it. At the same time the queen had plenty of room, which delayed swarming.

In localities where the beekeeper is not favored with an early honey flow, the food chamber left on all winter will fill the requirements in the spring and insure better wintering. It will certainly be proof against starving, which is the cause of more loss (especially in case of bees wintered outdoors when colonies are often found dead with plenty of food out of reach) than is supposed.

Another very desirable feature in connection with the use of the food chamber is in the production of comb honey. It will eliminate the need, in the first super, of bait combs, which are generally more or less filled with honey of an inferior quality either gathered from the fields early or removed from the brood-combs.

Yes, the food chamber is a big hit on the best-big-hive question. It puts the colony in ideal condition for wintering, and is the best-possible arrangement for breeding up early in the spring.

East Avon, N. Y. A. C. Gilbert.

SIFTINGS

J. E. Crane

IT was a pleasure to learn that E. D. Townsend is to write a series of articles for Gleanings. He is one of those substantial dependable men whose thoughts and ideas are well worth our attention.

* * *

On page 234, April Gleanings, the editor cautions beekeepers about closing the entrances of hives where bees have died during winter, to prevent the spread of foul brood—a wise precaution surely. I found a hive a week ago where the bees were flying from the rear of the hive instead of the front as they should.

* * *

I have never bought package bees in the spring to build up weak colonies. I have, however, often wondered how they could best be united safely with the weak colonies. Mr. Deyell gives us just this information on pages 236 and 237, for which he has our thanks.

* * *

W. H. Laws tells us on page 248 how bees may be taken safely from a hive without the bother of looking up a queen when shipping small packages of bees. While we do not ship bees by mail here in the North, yet we often want to start nuclei, and his method is just as useful for this purpose as for filling small packages.

* * *

I was sorry to learn from Philip Bishop, on page 250, that dry dusting of fruit trees is proving more destructive to bees than spraying. Fruit-growers have been using dust longer and more extensively in Nova Scotia than elsewhere, and he has doubtless studied the subject more carefully than is possible in this country at the present time.

* * *

There may be a good deal in Jay Smith's theory about bees building up rapidly after being kept from brood-rearing for a time, because the age of the bees is out of balance in the hive. But there seems to be something about the spring time that stimulates all nature to do its best to fill the earth with life and beauty. Every insect in earth, air, or water seems as much bent on increase as the bees. This is true also of birds and beasts. Shrub and tree burst into bloom that remained dormant through the warm Indian summer, and even the grass starts to grow at a temperature much below where it ceased to grow in autumn, or grows much faster. It is well that my good friend says his "observations may be correct in whole or only in part, and are subject to revision after further experiments and observations," a proviso that other writers might follow.

* * *

My! but it almost took away my breath when I read Mr. Atwater's article on page 249 and saw the picture of his auto trucks and trailers taking a whole carload of honey cans at one trip. I began to wonder how many such trips he needs to make to secure cans enough to hold his crop of honey, and how many trips it will take to carry his honey to the station when his cans are all filled. That is some business sure.

* * *

That picture of a defective apple, on page 242, is true to nature. Had a bee well dusted with pollen only alighted on the flower from which this apple came, it would have been a perfect apple and fit to grace the table of a millionaire, but now it is a "cull" fit only to feed swine or to be sent to the mill to be ground and made into boiled cider or vinegar—all for the lack of a single cell of pollen. It reminds one of the pathetic story of "the man who was lost, all for the lack of a horseshoe nail."

* * *

I was quite willing to run the risk of being turned to "a pillar of salt" from "Looking Backward," for the pleasure of reading E. R. Root's "Genesis of the Large-Colony Idea and What It Means," on pages 243-245. It certainly is a pleasure to note the various ideas on this subject. Langstroth, writing 70 years ago, says: "The very essence of all profitable beekeeping may be condensed into Oetle's Golden Rule, 'Keep your stock strong.'" But just how a very strong colony could best be secured does not appear only in a very general way. The idea of a large brood-chamber has had to grow like pretty much all of our improved methods of beekeeping. One of the interesting things in our line is to look over a modern catalog of "Beekeepers' Supplies," and note the wonderful changes and methods of conducting the business from 50 years ago. There has been an evolution in hives, sections, extractors, foundation, veils, shipping cases, etc., quite as pronounced as in the use of large brood-chambers to secure large colonies.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.— April 4 is here, and the prospects are very poor for a honey crop this year in southern California. The rainfall is away below normal, and warm winds have dried out the ground very badly. About half an inch of rain on April 1 and 2 in our part of the state, combined with several days of cold, cloudy weather, perhaps was more of a detriment than otherwise, coming as it did in the midst of the orange honey flow. It is pretty well agreed that it will take several inches of rain to do the honey plants much good after the long dry spell. However, some sections of the state fared better than ours and may have had more benefit.

California has such a variety of plants and such a long blossoming season that a complete failure of a honey crop for the entire state is unknown. It is the beekeeper on the great sage and other unirrigated ranges who gets the big crop one year and a failure the next.

The oranges have been blossoming for some weeks, but very little honey has been stored. With the blooming period at least half over, the crop from this source is sure to be very light per colony. Yet the unusually large number of colonies that have been moved to the groves this year may, in a measure, make up for the lower amount per colony. The black sage promises nothing, and many beekeepers are moving from the sage ranges to the orange, with the hope that the colonies will at least fill up there. One redeeming feature is that most colonies have an abundance of old honey, and many would have enough to go through another winter even if they did not gather much surplus this year.

Many colonies have brood in from three to five frames in amounts equal to the size of a saucer, the balance of the comb being filled with sealed honey. This seems to me to indicate that there has been just about enough honey coming in to keep the colony going in good condition and feed the growing brood. If the honey crop proves as short as one is led to believe at the present time, this is an ideal condition. If the colonies were very strong with eight and ten frames of brood to feed, they would consume all of this surplus honey and need feeding for next winter as well. But we never give up hope in California, and we may yet get enough honey to keep the wolf from the door.

Buyers have been around looking for light amber honey. They say that they do not care to buy white honey. Six to seven and a half cents per pound seems to be the selling price for the darker honeys. Orange honey is not in demand as it was when first extracted about a year ago. The past season again goes to show the wisdom of selling when a good price is offered. The average beekeeper, like the average farmer, often proves a poor speculator when it comes to holding his crop for higher prices. Expenses, deterioration, interest, insurance, all count against a crop after it is ready for market.

L. L. Andrews.

Corona, Calif.

* * *

In Northern California.— Barring a few intermittent showers during the past six weeks, our section has not only had no rain but an unusual amount of dry north wind. Many of the honey plants were suffering for lack of moisture. In fact, some of the sage of the Coast Range which had been in bloom throughout March was beginning to show signs of yellow. Foothill beekeepers were having frequent visions of bankruptcy until Easter Sunday ushered in a fine general storm. Today (April 2) it is still raining, and for the immediate vicinity we have had a wetting of over three inches. Although the storm will not bring us up to our average rainfall for this period of the year, it has been most opportune nevertheless, and has brought thousands of dollars to the fraternity.

Up to April first there was good flying weather in deciduous orchards, benefiting both the beekeeper and orchardist. Many beekeepers today move bees to the deciduous orchards, and their compensation ranges usually from $1.00 to $3.00 per colony. The demand for the little fertilizers amongst orchardists is ever on the increase, and some of the northern county fruit-growers have been compelled to get bees from a considerable distance since there is a scarcity of these polliniferous insects in their own territory, which, unfortunately, is not conducive to beekeeping.

The beekeeper contemplating this form of migration has the following points to consider: (1) The duration of the deciduous fruit bloom and its relationship to the next source of nectar. An interval of 10 days, with a total absence of incoming nectar, will very seriously retard brood-rearing and will make no end of trouble in securing a large working force during May and June. (2) The danger in controlling American foul brood. The risk is especially great, for in the neigh-

borhood there are usually many other bees. Most districts have inspection, and certificates of health before moving are an added precaution. It is of the greatest importance, though, to bear in mind that bees should not be placed in the orchards until the buds open, and should be taken out just as soon as the bloom is over. (3) Expense involved in moving. The entire expense should be more than compensated for by the orchardist, as it too frequently happens that there is inelement weather during the blooming periods, especially in the case of the almond, and that consequently the bees are sometimes in poorer shape at the termination of fruit bloom than they were before being moved. Many bees may be caught out during a sudden change in the weather and never return to the hives. Thus, whatever the orchardist pays per colony to the beekeeper should be over and above the moving expenses incurred. Beekeepers should not attempt an enterprise of this kind unless they can see a profit. By all means keep books on this type of migratory beekeeping. It is one phase of beekeeping that is not a gamble, and is quite unlike ordinary honey production where we not only do not know what the crop will amount to but also do not know what it will sell for.

Although the California State Beekeepers' Association did not hold their annual meeting during the past winter, owing partly to the fact that President Hartman was away in the East, the program for the coming season gives promise of being an auspicious one. Our organization has maintained its membership, and the executive committee contemplates issuing bulletins from time to time relating to the work of the association. The secretary is E. R. Randall, Harrison Blvd. at Grant Ave., Oakland.

Big Sur, Calif. M. C. Richter.

* * * *

In Utah.—Yesterday (April 3) I took 215 colonies of the home apiary out of their winter pack. Two hundred and nine were alive. The season is a little backward, although some natural pollen is coming in.

The mountains are still heavily covered with snow down to the base. Willow and dandelion in the valley will soon furnish an abundance of both honey and pollen, and many colonies will be swarming by May 10 if not given plenty of room.

The abundance of moisture in the ground is sufficient for the spring bloom, and the heavy snow in the mountains will assure plenty of water for irrigation; but a very dry summer could cut down the yield from the non-irrigated alfalfa, which is our best producer when conditions are just right and gives the finest honey.

Markets are stiffening and honey is moving well locally. Disease is also well in hand in this section through the cooperation of our county inspectors and our efficient State Inspector, D. H. Hillman.

The authorities have tab on all the bees in the state, as each beekeeper, whether the owner of one colony or one hundred, must take out a license for which he pays one dollar. I must take out a license for my four apiaries, giving the number of colonies and exact location of each. Another law compels every beekeeper to keep his bees in modern hives. This law must be watched closely enough to make it operative, but the heavy fine that goes with it makes people dispose of their bees in box hives or put them in modern hives.

Are these laws a little arbitrary, and will they have a tendency to exterminate the little fellows? M. A. Gill.

Hyrum, Utah.

* * *

In Arizona. Spring conditions have shown but slight improvement since my last report, the general situation as to the early honey flow from minor sources being bad. In favored spots some creosote bush (*Larrea*) is beginning to bloom, offering a limited food supply. On the Papago reservation southwest of Tucson a variety of flowers are in bloom as a result of more favorable precipitation, and such locally favored areas may exist elsewhere in the state.

I shall watch one local apiary with interest this spring on account of its being in the vicinity of a good supply of "ironwood" (*Olneya tesota*). This is a small tree of the legume group, said by our botanist, Prof. J. J. Thornber, to be a good honey plant. Its distribution is restricted to extreme southern California, Lower California, and that portion of Arizona to the south and west of Tucson, and it seems not to have received mention heretofore as a honey plant. As it blooms somewhat earlier than mesquite, it may prove valuable to that one of Mr. Collier's apiaries which is located near it.

I am observing the mesquite-catsclaw nectar conditions with increasing interest each year. Because of the fact that these two plants bloom at essentially the same time in a given locality, and because they grow intermixed in ever varying proportions, the so-called mesquite honey is a mixture in varying proportions of both mesquite and catsclaw. However, in the common parlance of the region it is called simply mesquite honey. Since the entire honey flow from this

combined source, especially the first, or May flow, seldom fails, it is rightly regarded as the most dependable natural source of nectar here. All this has led to the more or less prevalent belief that mesquite is very dependable, and to the locating of apiaries with reference primarily to that plant and with little reference to the catsclaw. My own observation, extending over only a few years but backed by the belief of some of the more observing beekeepers, is that of the two sources catsclaw is the more dependable in southern Arizona. At times, as two years ago, both species of trees were very full of bloom, but the honey was practically pure catsclaw. The mesquite blossoms at that time were dry, and scarcely a bee could be found on them. Similar but less extreme conditions were observed in 1922. Further, I have yet to see a good second honey flow during the July-August rainy season, though the references to mesquite and catsclaw refer to them as blooming again at that time. In fact, the mesquite blooms to some extent at that season, but the nectar yield is not apt to be great, while the catsclaw (*Acacia Greggii*) seems seldom to bloom at all in the second period. Consultation with the botanist in reference to this point also substantiates these observations. The sources of nectar during the summer months, outside the irrigated districts, are then many and various, but all minor.

Acacia constricta, another catsclaw with yellow globular blossom clusters, does bloom profusely in the rainy season, but is of practically no value as a source of nectar. *Mimosa biuncifera*, also a catsclawlike plant, is a good nectar source at this season, but is hardly abundant enough to be of great importance.

Tucson, Ariz. Chas. T. Vorhies.

* * *

In Louisiana. The month of March, with the exception of a few days, was one of the coldest seasons here in Louisiana for quite a number of years. Thin ice formed on exposed water as far south as the Gulf. At the same time it rained almost every day, and in the northeastern part of the state a slight snowfall made the bees take to cover.

All bees here in Louisiana are wintered on their summer stands and are left unprotected. Almost up to March the season was warm, with flowers blooming everywhere, resulting in the brood-nest being filled and some colonies storing honey. So you may imagine the feeling of the beekeeper upon seeing the thermometer go to 32 degrees, and then several degrees lower.

The condition of the bees here at the University was far advanced. Some of the colonies would possibly number 50,000 bees. The thermometer one morning registered 28 degrees. I, of course, looked for many young bees to be killed from being chilled, but, much to my surprise, nothing of this nature occurred here.

Today (April 2) is balmy and beautiful. The bees are flying freely and working on willow, white clover, dewberry and other wild blossoms. This is what is being done all over central and south Louisiana, and, if fair weather continues, I predict a big crop of honey from these sources alone.

The shippers of bees and queens in pound packages were never in better condition to send out the golden beauties than now. They are nervously awaiting the sound of the gong to "go." Many thousands of dollars in orders have been booked for this season's shipment to Canada and to the far northern states, and unless the cold is prolonged into the next month nothing can interfere with these shipments. E. C. Davis.

Baton Rouge, La.

* * *

In Texas. The month of March has been adverse to brood-rearing in most of Texas. Continued cold and rainy weather has caused the consumption of enormous quantities of stores, the death of much brood by chilling and the loss of many colonies from starvation. This has been offset, however, by the honey plants improving to such an extent that it looks as though a big crop is assured.

A freeze on March 19 gave many plants like huajilla and Mexican persimmon a bad setback but now they seemingly have recovered and promise to give a flow of nectar. In the far southwest the bloom buds of mesquite are coming with the leaves. The old-timers regard this as assurance of an early honey flow. The cold wet weather is just what the horsemint likes. It is stealing out and is very abundant throughout its range.

During the summer of 1922 quite a number of beekeepers in Texas suffered a heavy loss in bees from poisoning. This was occasioned by the application of arsenical poisons to cotton. Indications investigated where loss occurred show that molasses or other sweet syrups were used as binders to fasten the poison to the cotton plants. Where only the dry arsenical poison was applied no damage could be detected. The experimental apiaries had three colonies of bees located about the center of a 1200-acre cotton field which was treated according to the Coad method of dusting. These bees showed no signs of trouble resulting from the poison. In another location four apiaries were almost killed out as a result of the application of arsenic and

molasses to the cotton. It is yet doubtful whether the arsenic applied by the Coad method is a menace to bees. It is also doubtful whether the increase in the production of cotton in fields where the poison is applied, is sufficient to make the dusting profitable. Many beekeepers are moving their apiaries away from the cotton fields, as they fear the results of the campaign now on for the very extensive poisoning of cotton during 1923.

The experimental-apiary project was established to carry out, on a commercial scale, such experiments as are usually tested with one or two colonies. One of the most interesting topics now before beekeepers is that of apiary economics. A project on this subject began on January 1 and is expected to continue four years. A preliminary report will be published at the end of each year. One hundred colonies of bees are used in the experiment, and every operation, from the nailing-up of the hive to the selling of the honey, will be carefully itemized in cost of both money and labor.

Many beekeepers are asking the cause of the very small amount of brood which they find in their hives at this time. The answer is apparent if one will look over the temperature records of the last three months. During January the extreme warm weather brought on an expansion of the brood-nest beyond a limit which the adult bees could cover, and the four freezes of February and March chilled so much brood that at the present time the brood-nest is far below normal. It is doubtful whether the bees will reach their full strength in time to take advantage of the early spring honey flows.

San Antonio, Texas. H. B. Parks.

* * *

In Alabama.—Many beekeepers in the northern states will, no doubt, be disappointed in the date of delivery of package bees this year. A few breeders may have taken orders without the proper facilities for filling them promptly, but in most cases weather conditions alone are responsible. During January and February the weather was very warm; the bees began brood-rearing, but on February 20 we had the worst freeze of the winter, setting the bees back at least 30 days. They have not recovered from this yet. Since that time we have had nothing but cool, cloudy weather with rain almost every day, and to raise queens under these conditions has been practically impossible.

Many of the colonies are on the verge of starvation and must be fed. Going over muddy roads to feed bees while it is raining all the time is the condition that now confronts beekeepers of the "Black Belt." Beekeepers, however, are not the only ones affected, for the farmers cannot plant their crops. This should cause more land to be left to grow clover. When the weather becomes fair, we hope we can keep the bees in condition to gather it.

With no honey on the market here and the present price of sugar, the demand for honey at a good price should be strong next fall. We cannot have everything our way, but it will be a hard struggle to tide the bees over till the main honey flow which comes about May 20.

Montgomery, Ala. J. M. Cutts.

* * *

In North Carolina.—Just at this time in the eastern half of the state brood-rearing is approaching the peak of development, with the all-important tupelo and black gum bloom within possibly two weeks of opening, and with holly and a number of less important bloom just a little in advance of these. Where the bees were rich in winter supplies the amount of brood development has been quite large; but, unfortunately, with so much mild weather late in the winter, an unusually large amount of the supplies was consumed through fruitless winter flights, and beekeepers generally find too many colonies are below par in the matter of "preparedness" for the impending harvest of honey if weather conditions are right for a good honey yield.

There was much apprehension as to the damage done by a heavy frost and dangerous freeze that swept the eastern half of the state along with the Atlantic Coast states generally Easter morning; but, so far as this section is concerned, there seems to have been very little, if any, real setback inflicted upon brood development. Furthermore, the very day after the cold wave, field bees were coming in with evidently bumper loads of both nectar and pollen. Many colonies with seemingly very scant stores are now (April 7) far advanced in brood-rearing and showing incipient inclination to swarm.

Indications generally are for a good honey season, although the danger from frost is by no means past. It was on April 12, two years ago, that a frost and freeze almost completely cut off the honey flow throughout the state.

Very few, if any, of the beekeepers have any of their 1922 crop on hand now, and there is every assurance that the market all through the state will be in fine condition to absorb the 1923 crop with unusual rapidity if the yield and quality this season are normal, as they promise to be.

As usual the western or mountain region of the state is very much behind the eastern in brood development. Poplar and sourwood, two of the main sources

of nectar there, do not bloom until late May and through June into July. This gives the beekeepers in the western end of the state much more time for preparatory brood-rearing than is possible in the eastern end, where much of the best bloom comes along during April and May.

Wilmington, N. C. W. J. Martin.

* * *

In Michigan.—Bees are not wintering well in southern Michigan. In northern Michigan where an unusually large amount of snow has covered the ground throughout the winter the loss will not be so great, but south of the snow belt, colonies wintered either outside or in the cellar have suffered considerably. Bees have had very few opportunities for a cleansing flight since the middle of January. On several occasions when the temperature rose above freezing and promised relief on the following day the mercury dropped from 20 to 35 degrees within 24 hours, in one instance to the great confusion and loss of a cellar winterer who had set out of the cellar 50 colonies in distress. Severe cold winds and a rapid drop in temperature the following day were fatal to approximately 50 per cent of these colonies.

The season thus far is easily three weeks later than that of last spring. Bees gathered pollen from alders on March 11, 1922; but, as this is being written (April 6), there is no pollen available and not likely to be for several days. This is probably due to the excess of snowfall in the northern part of the state, which is cooling the prevailing winds from the north to an unusual extent.

A few cases of winter injury to clover are reported in southern Michigan, but sufficient rainfall during the next six weeks will remedy this situation. Northern Michigan should receive an exceptionally fine honey flow from clover in view of the protection received from the excess snowfall.

In spite of the competition from maple syrup, honey is moving from groceries fairly well. In fact, the demand has picked up slightly in the last 10 days. Good comb honey in any quantity is scarce in Michigan, and there are but few large lots of white extracted in the hands of producers at this time.

Hon. E. B. Manwaring, ex-president of the Michigan Beekeepers' Association, now a member of the Ways and Means Committee of the House of Representatives, has introduced into the Legislature a bill requiring that all honey sold in Michigan hereafter shall show on the label in what state the honey was produced; requiring that all bees sold in the state shall have attached a permit from the State Inspector of Apiaries; providing that county supervisors may hire deputy apiary inspectors for the purpose of inspecting bees in that county, said deputy to be appointed and to perform his duty subject to the approval of the Commissioner of Agriculture; requiring that all bees brought into Michigan from other states or countries be accompanied by a certificate of health issued by the official inspector of the place whence they came.

A new class of Federal Vocational training students has been enrolled in beekeeping. The students will be at the college an entire season and will purchase their own bees for study and increase, in this way making a start in business while they are learning to keep bees.

East Lansing, Mich. R. M. Kelty.

* * *

In Georgia.—The weather has been very unfavorable for honey secretion of late, and happy is the beekeeper whose bees are well supplied with stores, as this spring has demonstrated the great utility of proper preparation for the succeeding winter and spring. Most colonies in this section were pretty well prepared for such a spring as we are having, and those that were not are showing the need of it.

About the 20th of March the temperature here went down to 28 degrees and killed nearly all very tender vegetation. Since that time there has been a great scarcity of nectar, with the bees very strong, some even wanting to swarm, but the cold wet weather deters them. When the weather does warm up for a few days, work in the apiary is very much hindered by the bees making the most frantic efforts to rob whenever a few colonies are handled.

The prospects for honey here are none too bright, but we cannot yet tell what the effect of the freeze will be on the honey plants nor what the weather will be when the main honey flow is due. There is still a pretty good acreage of cotton planted here, and melons too, but not many muskmelons nor canteloupes, which are best for honey. If the weather continue rainy there will be lots of Mexican clover from June to October.

Mr. Wilder writes in the Dixie Beekeeper of a great mortality of bees in the Gulf coast region of several states, whole apiaries being wiped out though having plenty of stores and the few remaining colonies not having enough energy to rob nor even to take honey exposed to them. I have had no experience with such a condition, but in talking, a short time ago, with J. W. Sherman of Valdosta, he said he had one apiary that began to dwindle badly without apparent cause. He tried to feed the bees honey, but they would not take it. On examination he saw that they had plenty of hon-

ey, but no pollen, so he moved them to a locality where pollen was to be had when they at once began to thrive again. I rather think that he has solved the problem, for his bees seem to act just like Mr. Wilder's. It would be well for all to take notice, and, if their bees show the symptoms described, to see that they have plenty of pollen as well as honey, for, of course, both are indispensable to the bees. T. W. Livingston.

Norman Park, Ga.

* * *

In Ontario. This is April 10, and yet winter is with us to the extent that nights are frosty and snow still lies two feet deep or more in the timber land. There have not been more than three days since March 1 that bees could fly freely here, and even when they did fly the temperature was below what it should be for best results. Clover was covered until a few days ago, and at present it is in perfect condition—in fact, it looks just about as it did last November when winter set in.

Reports at hand so far indicate that the consumption of stores has been very heavy, and no doubt there will be a heavy loss in apiaries not properly fed last fall and neglected this spring. More than once have we firmly resolved that never again would we be caught with light colonies in the spring, but once more we have to confess to being caught that way this spring. We have just completed giving all the eight apiaries in the home section a hasty examination, and in each apiary we found some short of stores and —I am almost ashamed to confess it—a few already starved. We thought that all were beyond danger. If the weather had been as usual during the last week in March, a few that starved might have been saved; for during that time was the worst weather of the season, with temperatures below zero and a gale blowing about all the time. Looking at the colonies then was unthinkable, no matter how necessary. When we were able to get to the yards, we found something like this: One yard of 160 colonies had four starved, but only a few others short of stores. Another yard of 95 had but one dead. It had also starved. This is bad enough already; but, while I am at it, I might as well tell the worst. We actually had 8 colonies starved in one yard, and about a dozen others in the same apiary were reduced to close rations all right.

The strange thing is that not a single eight-frame Langstroth hive was short of stores. Strange on the surface all right but not so strange when the conditions are analyzed. Each colony in the eight-frame hives was fed all the bees would take, as is our custom. In that condition they rear no brood late in the fall as colonies in large hives often do after feeding. Most of the stores in the smaller hives was sugar syrup. Needless to tell anyone that in a winter like the one just passed, sugar syrup is the very best food, all points considered. In the larger hives, more or less empty combs were left, allowing late brood-rearing, and then again the stores were sweet clover and buckwheat honey largely. Many of these combs granulated solid, and the bees starved or developed dysentery after subsisting on this poor food during an abnormally cold winter with no chance of a flight for months.

My attitude in regard to bees wintering on sealed stores has been called in question on a few occasions, and I wish to relate an incident that has come under my eye during the last six months. Last September a fine colony at an outyard was found to have a few cells of American foul brood. While I do not think it pays to try to save colonies found in that condition in the fall, I decided to try to save this one, because I had given it a splendid young queen only a few weeks before I noted the disease. Accordingly six very heavy combs of honey, sealed as perfectly as possible, were set aside. I purposed taking their combs away and giving them these six sealed combs in October. But we were very busy and the matter was neglected. About Nov. 12 when the boys were away hunting, I took a trip to the yard where this colony was, and, although the day was chilly, I decided to try to get the bees on to these full combs. It was too cool for bees to fly, but I literally swept them off the combs on to the bottom of the hive and then placed the full combs in the brood-chamber. I smoked them freely to warm them enough to crawl up among the combs, and went home feeling that it would have been much better to let the bees perish and then to have melted up the combs. They never had a flight till March 3, and then it was only partial, as the day was too cool and cloudy here for a really good flight. I did not see them again till yesterday (April 9) when we visited that apiary. Expecting to find the bees all dead I at once went to the hive in question. I found the six combs literally covered with bees from end to end and from side to side, a division board having been placed next to the outside comb. Sealed honey was in evidence on all six combs for their full length. After examining the whole apiary we pronounced this colony to be in the most perfect condition of any in the yard. If this does not answer the question as to whether bees will winter successfully on solid combs of good honey or sugar syrup, please give us a more exacting test.

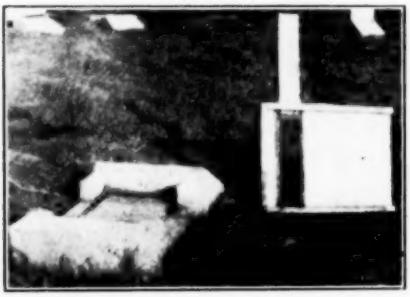
Markham, Ont. J. L. Byer.

XUM

HEADS OF GRAIN from DIFFERENT FIELDS

Concrete Hive-Stand and Ventilated Hive Floor. I am enclosing a picture of a concrete hive-stand and a bottom-board of my own make. The hive-stand is the same shape as the wooden stands except that it is not made solid. The top is hollow about half way down and open on the sides to let air under the hive.

The bee books recommend raising hives on blocks for ventilation. I do not like



Hive stand made of concrete arranged for ventilation through bottom-board.

that way; so I am trying a bottom-board made of flooring. The board next to the back is left loose and a piece of wire screen is tacked over the opening on the lower side. This keeps the bees in. When ventilation is needed, take the board out, and when not needed put it in. This gives ventilation at the back of the hive where it is needed. E. Sterner.

Trevose, Pa.

Is It Worth While to Clip the Queens? When it comes to clipping queens, there are still some of us, even with 1000 colonies or more, who think that it pays to clip all or as many as possible, and we never carry scissors to do it.

For beginners, the following method is probably best: Set the comb on which the queen is found at an angle but almost vertically against the hive. Touch the queen if necessary to get her to walking slowly up the comb. Without removing her from the comb, grasp the wings on one side with thumb and forefinger and then draw the edge of a knife blade gently across wing against the finger, taking off about half of the wings on that side. The instant the queen feels the pull on her wings, she nearly always grasps the comb firmly with her feet so that there is but little danger of hurting her in any way, and, holding to the comb with her feet as she does, she is usually nicely out of the way. If she does double up one leg so as to get it in the way of the knife, if one waits a moment she will often remove it from the place of danger and again grab the comb with it. We have our students practice on drones. After considerable dexterity is gained by this plan, other methods may be tried, but there will never be a need to abandon the knife, which is always handy.

Do you say that you know enough to control swarming without clipping? So do I, but with a series of outyards and our trips nicely timed, there may come a few days of cool or even cold weather, cloudy or rainy, when bees cannot well be worked. When the sun shines again we are needed at five or six yards at once, and away go the swarms if queens are not clipped. If they are clipped, we have at some yards a few days' leeway.

The old fable about bees not swarming when there is plenty of empty comb seems to apply here only after July 10, which is after our normal swarming season.

Meridian, Idaho. E. F. Atwater.

To Prevent Escape of Heat Between Hive Parts. I find practically nothing in bee literature about stopping cross currents of air between brood-chamber and supers or under covers. If a gasket of loosely twisted string or yarn or several strands of cotton-wick packing be used between hives, supers, etc., it will do much to prevent loss of heat from the colony. This material would be better and more easily removed if saturated with melted grafting wax. I use the government recipe—4 parts resin, 2 parts beeswax, 1 part linseed oil, by weight, melted together. I think that a little more beeswax will be better for this purpose, as it will be less affected by heat or cold. A little lard or oil will prevent the sticking to the hands.

I feel sure that these cross currents of air are more or less detrimental to the queen going from one brood-chamber to another, or to the bees entering the first super early in the season. This hive treatment will help greatly, especially with weak colonies early in the season, and in the preparation for wintering. Care should be taken not to use enough material to increase the bee-space very much. A. L. Littlefield.

Salem Depot, N. H.

To Examine Brood-Chamber Without Lifting Supers.

Here are illustrations of a device of my invention, which device carries all the weight of the supers regardless of the numbers, and allows the brood-chambers to be removed without any lifting while making inspections. Also when inserting escape boards the supers are not disturbed.

This device has been in use during 1922, and in four different localities in the state is now housing bees securely packed for winter. One is in the Experimental Yard at Cornell University, Ithaca, N. Y.

The brood-chamber remains in the packing-case all summer and does not require artificial shade other than furnished by itself. The brood-chamber may be removed from under the supers, looked over for queen-cells and restored to its position under the supers in five minutes without any lifting. An inspector could look over a large yard for disease in a short time.

S. A. Penney.

Ilion, N. Y.

Supers supported on winter case permitting brood-chamber being pulled out for examination.

Removing the Queen to Prevent Swarming.

For the past three years I have been testing this method in the production of sage honey. I am on the northern limit of the sage, and have only the black button sage. I build up my colonies in a two-story brood-chamber. At the beginning of the main honey flow I kill or remove the queen, then in eight or ten days destroy all queen-cells and give a ripe queen-cell from my best queen, or give a young laying queen.

These colonies give no trouble with swarming, and yield at least one-fourth more honey. Such colonies are in good condition for winter as the queen will lay nearly as well as a later-raised queen.

The brood-chamber is pulled out at the back of the winter case, leaving supers in place.

With this method and a good strain of Italian stock, one can forget there is such a pest as European foul brood. This method is not new as it has been used by others, but there is very little written about it. I have so much faith in this method that I expect to practice it in a wholesale way next season.

Antioch, Calif. Geo. W. Moore.

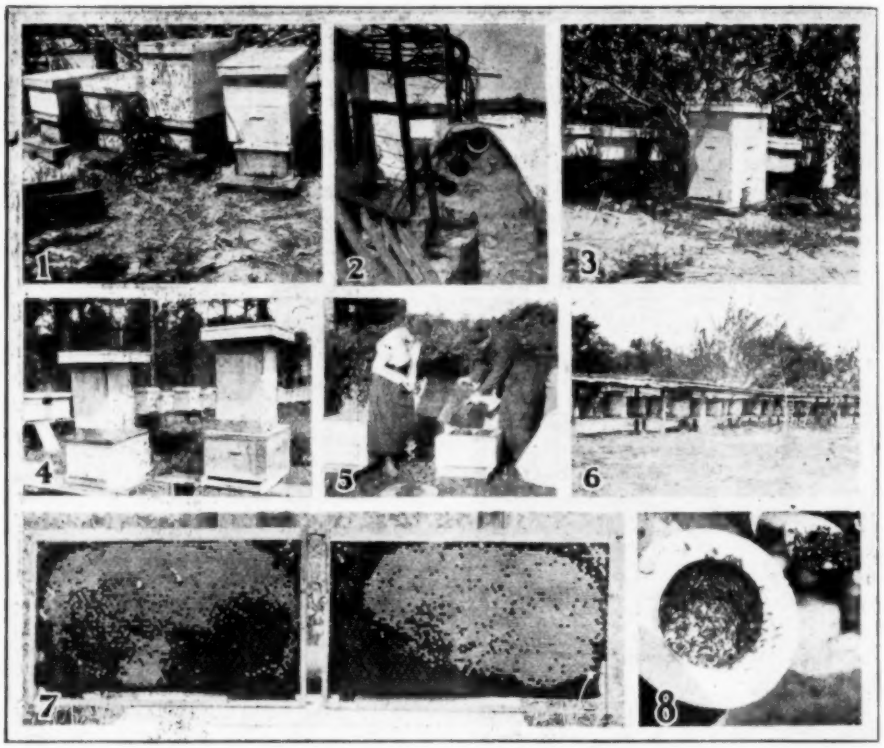
[In case any of the colonies have started queen-cells in preparation for swarming when the queen is killed or removed, it is safer to introduce a young laying queen after the interval of 10 days of queenlessness than to give a ripe queen-cell, for sometimes such colonies will swarm when the young queen emerges.—Editor.]

Two, Three and Four Eggs in Each Queen-Cell.

I introduced an Italian queen into a colony of Italian bees from which the old queen had just been removed. The colony was in the height of the swarming impulse but having some queen-cells in which no eggs had been laid. I introduced the queen by the smoke method. The queen I introduced was in her second year and was accepted by the colony. This was about the middle of May, 1922. There were practically no empty cells in the combs in this hive, and therefore no place for the queen to lay. The next morning I was astonished to see two, three and four eggs in each of the queen-cells, some of which had been previously built and some were newly built.

Tara, Gifu-Ken, Japan. Y. Hiratsuka.

XUM



Figures 1 and 4 show two methods of transferring from old to modern hives without cutting out the combs. In Figure 1 the old hive is placed beneath a modern hive of one or two stories according to their strength. The overlapping space, if any, is closed by means of boards, or building paper tacked on underneath the upper hive. If the colony in the old hive is strong enough and if an old black comb is put upstairs with other combs or foundation, the queen and the bees will gradually work up into the upper story and finally desert the old hive below. If it is not strong enough, or there is no black comb above, most of the bees, together with the queen, should be drummed up or smoked up into the upper story and a queen-excluder placed between. It's very important to get the queen above the excluder. No bee-escape is needed.

Figure 3 is the net result of the procedure shown in Figure 1 after the brood has emerged and the old hive has been removed.

In Figure 4 is another method of transferring without cutting combs, which is practically the reverse of that shown in No. 1. Half or two-thirds of the bees with the queen are drummed out of the old gum or box and dumped in front of the entrance of the new hive below. A bee-escape is then placed on top, feeding downward. Over the hole is placed the old gum containing the brood and one-third of the bees. The bees will gradually work downward into the lower hive, emerging bees following in three or four weeks. After the bees are out of the old hives, by either method, the combs can be cut out and melted up.

Figure 2 is a sort of a miniature house apiary which is seen all through the Island of Cyprus and throughout Palestine. This particular picture was taken by George M. Gray of Fostoria, Ohio, in the city of Nazareth, famous as the birthplace of Jesus. The hive proper consists of tiles probably two feet long and 8 or 10 inches in diameter. There is no contracted entrance. The whole end of the tile is left open. Three of the tile open on one end and three open on the other end of the so-called house apiary.

Figure 5. A young chap showing his best girl (queen) his best queen.

Figure 6. Log gum apiaries like those here shown, consisting of 70 or 80 colonies, are not uncommon in some parts of the South.

Fig. 7. A pair of Jumbo combs wired both horizontally and vertically. Experiments at Medina showed that when combs were wired vertically only, there was apt to be a waviness on account of the natural expansion between the wires. By wiring both **horizontally** and **vertically**, flat, perfect combs were secured. But the difficulty encountered was that the bees were apt to gnaw out the foundation or the comb where the wires intersect. This is more noticeable in some parts of the season than others.

Notice that the brood expands clear to the top-bar. If there is no stretching of the cells, if the colony is strong enough, and if, further, it has an upper story, the brood may or may not extend to the top-bar. But if the line of cells next to the top are stretched out of shape, the brood will not in any case go nearer than an inch and a half or two inches of the top-bar.

Figure 8. A live-bee demonstration. A quart of bees may be poured into one's hat or upon the hand, provided a little smoke is used in advance. The hat can be slipped gently upon the head, taking care not to pinch any bees, and no sting will be received. "The crossest bees will yield to this treatment and be as docile as kittens, provided one knows how to do the trick."—E. R. Root.

WHO'S WHO IN APICULTURE

We have again corrected our page of "Who's Who in Apiculture," to date as of April 1. Especial care has been taken to obtain information on requirements of the various states as to marking the net weight on packages of honey put on the market. It should be remembered that the Federal Government requires that packages of both comb and extracted honey shipped in interstate commerce is subject only to the regulations of the particular state. This page should be kept for reference so that inquiries regarding brood diseases or general questions on beekeeping can be sent to the proper official in the respective states. In those states where beekeeping is taught in the State Agricultural College, beekeeping questions of a general nature can be sent direct to the instructor in beekeeping at the college.

State or Province.	Beekeeping Taught in* Agr. College	Net wt. law. Extr.	Net wt. law. Comb.	Foul Brood Law†	State Inspector.	Secretary State Assn.
Alabama..	Yes	Yes	Yes	No		R. J. Morgan, Columbia.
Arizona..	No	Yes	Yes	Yes	P. H. Benson, Palo Verde.	E. Peterson, Mesa.
Arkansas.		Yes	No			
B. C.....	No	Yes	Yes	Yes	W. J. Sheppard, Nelson.	W. J. Sheppard, Nelson.
California	Yes	Yes	Yes	Yes	County inspection.	E. R. Randall.
Colorado..	Yes			Yes	N. Boggs, Ft. Collins.	
Conn.....	Yes	Yes	Yes	Yes	W. E. Britton, New Haven.	L. C. Burr, S. Manchester.
Delaware.		Yes	No			
Florida...		Yes	No	Yes	J. C. Goodwin, Gainesville.	R. H. Fryer, Sumatra.
Georgia..		Yes	Yes	Yes	S. V. Brown, Bixley.	L. C. Walker, Alma.
Idaho....		No	No	Yes	W. H. Wicks, Boise.	
Illinois...	Yes	Yes	Yes	Yes	A. L. Kildow, Putnam.	M. G. Dadant, Hamilton.
Indiana..	Yes	Yes	Yes	Yes	F. N. Wallace, Indianap.	C. O. Yost, Indianapolis.
Iowa.....	Yes	Yes	Yes	Yes	F. B. Paddock, Ames.	F. B. Paddock, Ames.
Kansas...	Yes	No	No	Yes	J. H. Merrill, Manhattan.	O. F. Whitney, Topeka.
Kentucky.		No	No	Yes	H. Garman, Lexington.	H. Garman, Lexington.
Louisiana.	No	No	No	Yes		E. C. Davis, Baton Rouge.
Maine....	No	Yes	Yes	Yes	F. L. Mason, Mechanic F.	G. A. Yeaton, Augusta.
Manitoba.	Yes	No	No	Yes	L. T. Floyd, Winnipeg.	L. T. Floyd, Winnipeg.
Maryland.	Yes			Yes	E. N. Cory, College Park.	E. N. Cory, College Park.
Mass.....	Yes	Yes	Yes	Yes	B. N. Gates, Boston.	Mrs. T. L. Wiles, Hingham.
Michigan.	Yes	Yes	No	Yes	B. F. Kindig, Lansing.	R. H. Kelty, E. Lansing.
Mississippi	Yes	No	No	Yes	J. L. E. Lauderdale, Leland.	
Missouri..	Yes	Yes	No			Miss Nina Scott, Clinton.
Montana..	Yes	Yes		Yes	R. J. Kleinh's'nk, Hardin.	O. A. Sippel, Bozeman.
Nebraska.	Yes	Yes	Yes			F. M. Parsons, Omaha.
Nevada...	No	Yes	Yes	Yes	G. G. Schweis, Reno.	L. D. A. Prince, Reno.
N. Bruns..	Yes			Yes	H. G. Miller, Fredericton.	H. G. Miller, Fredericton.
N. Hamp.	Yes	Yes	Yes			J. R. Hepler, Durham.
N. Jersey.		Yes	Yes	Yes	E. G. Carr, Pennington.	E. G. Carr, Pennington.
N. Mex...		No	No			
N York..		Yes	No	Yes	G. B. Atwood, Albany.	O. W. Bedell, Earlville.
No. Car...	Yes	No	No	No	C. L. Sams, Raleigh.	J. E. Eckert, Raleigh.
No. Dak..	Yes	Yes	Yes	Yes	R. L. Webster, Agr. Col.	R. L. Webster, Agr. College.
Nova Sc..	No	No	No	Yes	W. A. Brittain, Truro.	
Ohio.....	Yes	Yes	No	Yes	R. Faxon, Columbus.	F. Naile, O. S. U., Columbus.
Oklahoma	Yes			Yes	R. L. Blackwell Lexi'gton.	H. G. Howard, Wewoka.
Ontario...	Yes			Yes	F. E. Millen, Guelph.	F. E. Millen, Guelph.
Oregon...	Yes	Yes	Yes	Yes	H. A. Scullen, Corvallis.	H. A. Scullen, Corvallis.
Pennsyl..	Yes	Yes	Yes	Yes	C. N. Greene, Harrisburg.	C. N. Greene, Harrisburg.
Pr. Ed. Il.	Yes	No	No	Yes	H. Newson, Mt. Edw. Rd.	H. Newson, Mt. Edward Rd.
Quebec...	Yes	No	No	Yes	C. Vallancourt, Quebec.	J. A. Prud'homme.
Rh. Island	No			Yes	A. E. Stine, Kingston.	E. D. Anthony, Barrington.
So. Dak..	Yes	Yes	Yes	Yes	L. A. Syverud, Yankton.	R. M. Gilcreast, Brookings.
Tenn.....		Yes	No			G. M. Bentley, Knoxville.
Texas....	Yes	No		Yes	M. C. Tanquary, Col. Sta.	A. Hasslbauer, San Antonio.
Utah.....	Yes	Yes	Yes	Yes	D. H. Hillman, Salt L. Cy.	F. B. Terriberry, Salt Lake.
Vermont..		Yes	Yes	Yes	E. S. Brigham, Montpelier.	E. W. Larrabee, Shoreham.
Virginia..	Yes	Yes	Yes		E. S. Andrews.	Bruce Anderson, Vienna.
Wash....	No	Yes	Yes	Yes	B. A. Slocum, Pullman.	E. E. Starkey, Prosser.
W. Va....		Yes	No	No	M. K. Malcolm, Charleston.	W. C. Griffith, Elm Grove.
Wis.....	Yes	Yes	No	Yes	S. B. Fracker, Madison.	M. D. Fischer, Madison.
Wyoming.	No	Yes	Yes	Yes		Oliver Hower, Basin.

United States—Investigation and Demonstration in Beekeeping, Dr. E. F. Phillips, Apiculturist; Bureau of Entomology, Washington, D. C.

Dominion of Canada—Investigation in Bee Culture, C. B. Gooderham, Dominion Apiarist; Central Experimental Farm, Ottawa, Canada.

American Honey Producers' League—Dr. S. B. Fracker, Secretary, Madison, Wis.

* Beekeeping taught also in some other colleges and schools in Alabama, California, Indiana, Iowa, Ohio, Quebec, Tennessee, West Virginia and Wisconsin.

XUM

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—I would like to leave five colonies of bees about June 10 for a month or more. Is there any way I can fix them so they will not swarm while I am away?

Mrs. R. P. Rhea.

Montana.

Answer.—Much will depend upon what time your honey flow begins and whether you are producing comb honey or extracted honey. If your main honey flow begins at about the time you expect to leave or soon after, you can fix the bees so they will not swarm by taking out the queen about 10 days before you leave, then 9 or 10 days later destroy all queen-cells, being careful that none are missed, and introduce a young laying queen in the usual manner by means of an introducing cage. This plan requires either that young queens be reared so that they will be laying at the time needed or that these young queens be purchased from a queen-breeder. It would be better if you could then look into the brood-chamber a week later to see that all these young queens are laying, but you may not be able to do this. Colonies treated in this manner should not swarm during this season.

Another way, not quite so certain in preventing swarming but sometimes giving better results in honey, is to make an artificial swarm by shaking the bees from their combs back into the brood-chamber, then filling the brood-chamber with frames of foundation together with one empty comb, or if extracted honey is being produced, all empty combs if they are at hand. For comb honey two or three of the brood-combs should be transferred without shaking off the bees, but being sure that the queen is in the hive among the shaken bees, then the combs of brood are put into another hive and a ripe queen-cell given a day or two later. For extracted honey this brood that was taken away is put into another hive body, which is set on top of the supers, and later becomes a super as the brood emerges. This is really an artificial swarm with the parent colony above the supers and the swarm below. In either case plenty of super room must be given so that the colony would not become crowded for room to store their honey.

Kind of Foundation for Sections.

Question.—Which kind of foundation is more suitable for sections, the extra thin or the thin?

P. H. Dunn.

Iowa.

Answer.—As a rule it is safer to use thin super foundation instead of extra thin. When the honey flow is slow or intermittent, as it often is from clover, the bees will sometimes tear down the edges of the extra thin foundation, thus leaving a space between the section and the comb. During a heavy honey flow, such as that from basswood, the extra thin super foundation works very well and of course costs less per section because less wax is used. Since it is impossible to foretell the character of the honey flow, most beekeepers prefer to use the thin super foundation, then if the honey flow is not as good as expected the corners and edges of the foundation will not be gnawed away as much as when extra thin foundation is used.

Using Standard Frames in Jumbo Hives.

Question.—Will it cause any trouble to use the standard frames shipped with three-frame nuclei in Jumbo hives together with Jumbo frames?

R. J. M. Glassford.

Ontario.

Answer.—You can use the standard frames in the Jumbo hive in building up your nuclei to full colonies. Later, these frames should be taken out and Jumbo frames filled with foundation put in their places, but this need not be done until the colony has built up to full strength. In fact, if you so desire you can leave them in the hive until after the honey flow, but the bees will build combs in the space below the bottom-bar during a good honey flow. These, of course, will be drone combs. To prevent the bees from building these combs crosswise and thus attach them to several frames, it will be well to mix them among the Jumbo frames after the colony has brood in several of the Jumbo frames.

Permitting Queen to Lay in Food Chamber.

Question.—In using the big hive composed of a ten-frame standard hive body and a shallow extracting-super, should the queen have run of the food chamber or should a queen-excluder be used between it and the brood-chamber?

L. O. Reed.

Ohio.

Answer.—The queen-excluder should not be used until after the peak of spring brood-rearing. In fact, if you are producing extracted honey it may be necessary to give an additional hive body to furnish ample room for the queen previous to the honey flow to hold down swarming. Later, the queen should be put down into the lower story and confined there by means of the excluder. As the brood emerges from the food chamber it will be filled with honey since the queen is then confined to the lower story.

Partly Filled Supers for Feeding.

Question.—We have some supers partly filled with honey from last year. Will this be suitable for feeding back to the bees this spring? Raymond W. Gray.

Connecticut.

Answer.—Yes, provided there was no American foul brood among your bees last summer. It is well to have any old honey left in the supers cleaned out by the bees this month in your locality, for this honey will be converted into young bees for the harvest.

When to Confine Queen to Lower Story.

Question.—After bees have bred up in a two-story brood-chamber in the spring, how is the correct time determined for confining the queen to one brood-chamber?

New York. Forrest C. Dygert.

Answer.—The queen should be confined to the lower hive body at about the beginning of the main honey flow from clover in your locality. Usually, if plenty of room is given the queen will go into the upper story, but will not go back into the lower story to lay eggs. After she has been in the upper story for about three weeks or just before the brood has all emerged in the lower story, she should be put back into the lower story and confined there by means of the excluder. This should be done before the combs have become filled with pollen. It is sometimes necessary to put the queen below before the beginning of the honey flow from clover, to prevent the combs from becoming clogged with pollen.

Time for Putting on Comb-Honey Supers.

Question.—What is the proper time for putting on comb-honey supers?

Ohio. Cable Pipper.

Answer.—Comb-honey supers should be put on at the very beginning of the main honey flow or a few days before. Since in your locality the main honey flow is from clover you can judge the time for putting on the comb-honey supers by the appearance of the first white clover blossoms. The honey flow usually begins in earnest about 10 days after the appearance of the first white clover blossoms. Any time within these 10 days is the proper time for putting on the comb-honey supers, provided the colonies are strong. For extracted honey the supers should be put on earlier if the colonies are strong.

Young Queens to Prevent Swarming.

Question.—Will it prevent natural swarming if I introduce a young queen into each of my colonies this spring?

Michigan. Thomas L. Brayton.

Answer.—The introduction of young queens in the spring will tend to reduce the number of colonies that swarm, but does not entirely prevent swarming. Since some swarming is a result of the supersedure of queens that are growing old, the introduction of young queens will eliminate swarming resulting from supersedure. If the old queen is taken away during the swarming season, no queen-cells permitted to mature and a young laying queen is introduced aften ten days or more of queenlessness, a colony will not, as a rule, swarm during the season. Apparently the condition of the colony brought about by 10 days or more of queenlessness is of greater importance in preventing swarming than the age of the queen. Even if the old queen is given back at the end of 10 days the colony is not liable to swarm, provided ample room is given in the supers.

Giving Second Story for Spring Brood-Rearing.

Question.—In the spring when giving the bees another hive body, should it be put on top or under the brood-chamber?

Wisconsin. Louis A. Loboda.

Answer.—The second hive body should be placed on top, provided the colonies are strong. Some beekeepers argue in favor of giving the additional brood-chamber below on account of the better conservation of heat; but when this is done the queen does not go below to lay eggs unless she is crowded out of the upper story, and the combs are usually clogged with pollen, thus rendering them unfit for brood-rearing until the pollen is removed. Strong colonies are usually amply able to generate enough heat at this season to take care of the second story when placed on top. Colonies that are not strong enough to do this do not need the second story until later. Furthermore, in wintering out of doors, the packing should be left in place after this second story is given.

Giving Frames of Foundation to Nuclei.

Question.—When my nuclei are ready for extra frames of foundation, shall I put them at the side of the combs of brood or between them? J. B. Riggle.

Missouri.

Answer.—The frames of foundation should be placed at the side of the combs of brood instead of between them except in strong colonies.

Stores Granulated in the Comb.

Question.—What is the best thing to do with honey left for stores which has granulated in the combs? J. B. Stuyvesant.

California.

Answer.—Honey that has granulated in the combs is sometimes reliquefied during the summer if left with the bees. Some honey granulates so hard that the heat of the hive during summer cannot be depended upon to reliquefy it. In such cases the bees can be induced to take out a portion of it by uncapping the honey, then the combs can be taken out of the hive, laid down in a horizontal position and the cells filled with water by means of a sprinkling can. After the water has had time to dissolve the granulated honey the combs can be given back to the bees to be cleaned out.

XUM

JUST NEWS

Editors

A. E. LUNDIE, a graduate student of Cornell University, who is making a special study of beekeeping in this country preparatory to taking up work in beekeeping for the Union of South Africa, has returned to Cornell to take his examination for the degree of Doctor of Philosophy. Mr. Lundie has spent most of the last 18 months at the Bee Culture Laboratory near Washington, D. C., where he has worked out his thesis. Mr. Lundie plans to return to South Africa after he finishes his work at Cornell.

* * *

The financial report of the American Honey Producers' League, which was published in the April issue of the League Bulletin, shows a small balance in the treasury at the present time. It gives the receipts and expenditures of the League in detail up to the date the report was published.

* * *

A late number of "Botanical Abstracts," a publication devoted to the literature on botanical subjects, contains seven pages of abstracts of articles on honey plants, which were prepared by John H. Lovell. This copy can probably be obtained from the business manager of Botanical Abstracts, College of Agriculture, Ithaca, New York.

* * *

Through the efforts of the Ohio State Beekeepers' Association, Ohio now has a new bee-disease law carrying an annual appropriation of $5000 for apiary inspection work. This work is under the direction of Richard Faxon, Director of Agriculture, Columbus, Ohio, who, according to the provisions of the law, is empowered to formulate rules and regulations concerning the shipment of bees and provide for the enforcement of the act.

* * *

Miss R. B. Pettit, sister of Morley Pettit, Georgetown, Ontario, died at Phoenix, Arizona, on February 26 of pneumonia, following an attack of influenza. She was an active partner with Morley Pettit in the operation of the Pettit Apiaries. She conducted the important work of rearing queens for requeening the Pettit apiaries. Brother and sister had gone to Phoenix, Arizona, for a rest preparatory to the season's work in the apiaries when both were stricken with influenza and pneumonia soon after arrival. We learned that Morley Pettit is recovering, but is not yet able to return to his home in Georgetown. While Miss Pettit's name has not been prominent among American beekeepers, her contribution to the industry, in a quiet way in working out modern apiary practice with her brother, has been great.

* * *

The state of New Jersey Department of Agriculture has issued a new bulletin on beekeeping as Circular No. 53, entitled "A Manual of Bee Husbandry." This was written by Elmer G. Carr, Deputy Bee Inspector for New Jersey, who is well known to the beekeepers of this country. The circular is really a treatise on beekeeping, containing 91 pages and is well illustrated throughout.

* * *

According to data secured through the Bureau of Foreign and Domestic Commerce, the total amount of honey imported into the United States during 1922 from Porto Rico and Hawaii was 3,717,978 pounds, and the total imports from other countries was 2,020,760 pounds. This makes a total of 5,738,738 pounds brought into continental United States for the year. For the same period only 2,712,860 pounds were exported. For 1921 the total amount from Porto Rico, Hawaii and other countries was 4,460,536 pounds, while only 1,880,511 pounds were exported.

* * *

R. F. Holtermann, Brantford, Ont., has been doing some good work for Ontario beekeepers this winter. He succeeded in securing an appropriation of $5000 from the Dominion government for the suppression of brood diseases, which, together with the increase in the appropriation by the Province of Ontario of $10,000, makes a grand total of $15,000 for the brood disease work. He also initiated a movement to secure lower freight rates on honey in Canada. A reduction from second class to third class for less than carlots and fourth class to fifth class on carlot shipments of honey was asked for and secured. This gives the same rate on honey as on molasses and glucose. This reduction in the freight rates will make a difference of ¼ cent per pound on carlot lots from points in Ontario to Winnipeg, Manitoba.

* * *

Circular 37, "Beekeeping in Colorado," by Newton Boggs, is a new bulletin of Colorado Agricultural College.

TALKS TO BEGINNERS

Geo. S. Demuth

THIS month should be a happy one for bees and beekeepers. After having been confined to their hives for a large part of the time since last summer the bees should now be able to revel in the sunshine, and the beginner should be able on nice days to open the hive and study the interesting domestic economy of the bee colony.

In some portions of the South the bees are already storing honey in the supers, and beekeepers are busy giving the bees room to store the honey crop. In some cases in the South the bees may be making their owners trouble by swarming at this time. Farther north the busy season with the bees is still a month in the future, and in other cases even two months or more.

Clipping the Wings of the Queen.

A good excuse for examining the colonies during fruit bloom is that of clipping the wings of the queen. Beginners should by all means learn to do this, for it makes the hiving of swarms later a simple task instead of a difficult one. In addition to this there is no need of losing a swarm by absconding if the queen's wings are clipped.

To find the queen select a warm day, choosing the warmest part of the day when the bees are working most freely. Take out the first and the second combs as described on page 264, April issue. If there is brood in these combs, look for the queen, then set the combs into an empty hive or into a box that will hold two or three combs. If robbers are not troublesome these combs can be stood on end close beside the hive, leaning against it. This now leaves a space on the side of the hive toward the operator, permitting him to see the entire outer surface of the next comb in the hive. As each of the remaining combs is taken out, glance quickly over the exposed side of the next comb in the hive to see if the queen is there. If she is not, turn the comb just removed to examine the other side, proceeding in this way until the queen is found. If the queen is seen on the next comb in the hive, the comb now in the hands should be put back into the hive quickly and the comb on which the queen was seen should be taken out before she has time to go to the next comb. As the combs are put back into the hive, they are placed on the side nearest the operator in order to maintain an open space between the combs already examined and those yet to be examined. This work should be done carefully, and no more smoke should be used than is necessary. If the bees are inclined to be nervous and run about on the combs it is necessary to watch for the queen in the spaces between the lower edge of the comb and the bottom-bar of the frame, and also on the bottom and sides of the hive, for if the queen becomes frightened she may run off from the combs into these spaces.

When the queen is found pick her up by taking hold of her wings with the thumb and forefinger of the right hand. Transfer her to the left hand by taking hold of her feet or her thorax. The right hand is now free to pick up a pair of sharp-pointed scissors and clip off the greater portion of the two wings on one side. Finally, take hold of the wings on the other side with the right hand and set the queen back on the combs, being sure that she has a firm foothold before letting her wings loose. If the queen is not found after all of the combs have been examined and is not on the far side of the hive or on the bottom, the combs should be re-examined as they are put back into place, this time going over them as quickly as possible. If she is not found as the combs are put back into place, it is usually best to close the hive and postpone finding her until a day or two later.

Month of May, a Critical Time for the Bees.

No doubt more colonies fail to produce a crop of honey because they are permitted to run short of stores during the building-up period than from any other cause. If the beginner will make sure that his bees are rich in stores every moment this month, he will be richly repaid next month if the honey flow comes on at that time; so be sure to follow the simple rule of not permitting any colony to run below 10 or 15 pounds of honey at any time during the month. In other words, there should be enough honey stored in the hives to fill completely two or three standard brood-combs. If any colonies run short of stores they should be fed as described last month (page 265), giving them 10 to 15 pounds of syrup.

When to Give a Second Story.

When colonies have wintered well and are abundantly supplied with stores during the spring they often become crowded before the honey flow begins. If ex-

tracted honey is to be produced, a second story should be given to all strong colonies before they actually become crowded. It is best that this second story should contain combs partly filled with honey. Since the queen is permitted to lay in this second story, it is better to have old dark combs in it to induce the queen to go up and lay in these combs more readily than she would if the combs are new or have never had brood reared in them before.

If combs are not at hand for this second story, frames filled with full sheets of foundation may be used instead, provided the bees are gathering a little nectar from the field so that they will draw out the foundation and build combs. When foundation must be used in the second story it is best to put two or three combs of brood from below into the middle of the upper story, filling out with frames of foundation the vacant space thus made in the lower story. Ordinarily it is best to place the foundation on each side of the brood-combs instead of putting them between combs of brood.

If comb honey is to be produced a second story should not be given until the bees are somewhat crowded below, since comb honey cannot well be produced on a two-story hive. Sometimes it is possible to give a colony more room before the honey flow by taking out one or two combs of emerging brood and giving them to a weaker colony that has not yet filled its hive. When this is done it is not necessary to shake off the adhering bees, but care must be taken not to take a comb containing the queen. When all of the colonies have their brood-chambers filled with brood, pollen and honey it may be necessary to give a second story to prevent swarming and furnish an abundance of room for the queen until the beginning of the honey flow. Comb-honey supers should not be given until a few days before the honey flow is expected to begin. When the bees begin to store considerable honey and are found to be adding white wax to elongate the cells near the top-bar of the frame, it is time to put on the comb-honey super. Where white clover and alsike clover are found in abundance the honey flow will probably not begin until some time in June, and comb-honey supers should not be given until the first blossoms begin to appear.

Swarming Often Causes Loss.

If a colony of bees divides itself by swarming just before or during the main honey flow, the bees are not able to store much surplus unless the honey flow lasts until the two or more divisions of the colony have again reached sufficient strength to enable them to gather and store surplus honey.

Usually swarming can be prevented previous to the honey flow by giving the bees an abundance of room as indicated above. If a colony should swarm at the beginning of or during the honey flow, it should be handled as follows in order to prevent a division of its working force: While the swarm is out look for the queen on the ground in front of the hive, for if the queen is clipped she usually falls on the ground near the entrance of the hive and in her attempt to take wing sometimes crawls several feet away. The queen should be caught by placing the open end of a small wire-cloth cage over her, permitting her to crawl upward into the cage, and then putting in the stopper. The cage should then be placed in the shade so that the queen will not be killed by the heat of the sun. The supers, if any, should then be taken off from the hive, the hive set to one side and a new one put in its place, the new hive being equipped with frames of foundation and, if available, one empty comb, preferably an old dark brood-comb. The supers should then be put on the new hive, and both the old and the new hive closed. The cage containing the queen can then be thrust into the entrance of the new hive, thus making everything ready for the swarm to return. Sometimes swarms having a clipped queen will return without clustering, but sometimes they will cluster and remain on the limb for 15 or 20 minutes before they break cluster and return. When they begin to come back care should be taken that none of them find the old hive. Sometimes it is necessary to cover the entrance of the old hive with a piece of canvas or move it further away until the swarm has returned and entered the new hive.

After the swarm has hived itself and the excitement is over the old hive should be placed close beside the new one but with its entrance turned about a foot away. A day or so later it should be moved so that its entrance is close beside that of the new hive. On the seventh day it should be picked up carefully and carried away to a new location. This should be done preferably in the afternoon when many bees are seen flying in front of the old hive, and it should be carried away so carefully that the bees do not realize they have been disturbed. When done in this way the bees, as they go to the field, will enter it by mistake. This will so dechanged and will return to their old location, while after some hesitation they enter the new hive. The old hive should be placed where it is not near another colony so that no bees from other colonies will enter it by mistake. This will so deplete the old hive that it cannot send out after-swarms when the young queens begin to emerge.

OUR HOMES

A. I. ROOT

What manner of man is this, that even the winds and the sea obey him!—Mat. 8:27.

For, lo, he that formeth the mountains and createth the wind, and declareth unto man what is his thought, * * * the Lord, the God of hosts, is his name.—Amos 4:13.

The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh, and whither it goeth.—John 3:8.

BEFORE discussing the wind and windmills, I want to give a little incident of years ago, with a moral to it. I have told you of my "giving lectures" on electricity at country schoolhouses, when I was in my teens. My apparatus was mainly home-made. When I first "caught on" to what was being done in the great wide world I went to our school superintendent, then to our *Mogadore doctors, and finally to our *minister*. He (good man as he was) told me all he could and turned over to me his whole fine (at that time) library. I soon had all the books I could get track of, and the one that helped me most came all the way from London, England. It was "Frances' Electrical Experiments."

In making my own apparatus I not only "got in" with the blacksmith and tinsmith of our town, but also with the *miller*, where I found a copy of the Scientific American, which had almost just started. After a year or two of "lecturing" and a little apprenticeship with the jeweler, I opened a shop as a repairer of clocks and watches. It occurs to me just now that this introductory story is going to have *two* morals, instead of one. The first moral is, when you decide what you want to do in this world, first and foremost find out what the great wide world has *already done* in that particular direction.

One morning when I was full of business a man called to see what "wonderful things" I had done. He had probably never thought it worth while to attend one of my public exhibitions.

After I had set up my apparatus, or quite a part of it, to demonstrate what electricity might do, even if I was worried over things that sorely needed my attention, he announced he must not spend any more time, but instead of giving me just a *little* word of thanks, he said:

"Mr. Root, this is all very curious and very strange, but what does it all *really* amount to? The *whole thing* isn't worth as much to the *world* as just *one single hill of potatoes.*"

The above statement was made only a little more than 70 years ago, and it was made by a good man who occasionally preached, or tried to preach, the Gospel*. May I venture a word to preachers (who may see this) right here. Before you try to preach, *get an education*. Now I will make a concluding remark to everybody as well as preachers. When a busy man stops his work to enlighten you on something about which you are interested, do not forget to give him just a little word of thanks. Now for the "wind."

From the "Power Plant Engineers," semimonthly, I clip as follows:

Notes on Wind Motors.

(By Robert Grimshaw.)

Wind motors were among the earliest employed; and in some countries—notably Holland, in which country there is one point from which 90 can be seen—their use is a feature of the minor local industries. Their advantages are (1) simplicity, (2) low first cost of installment, (3) almost no operating cost, (4) low depreciation, (5) independence of fuel supply.

Their principal disadvantages are: (1) uncertainty of power, (2) variations in power, (3) limited capacity, (4) difficulty of control of amount of power.

The first and second disadvantages are partly done away with when the windmill is supplemented by a reservoir for water pumped, or by storage batteries for electricity generated by a dynamo driven by the mill. The latter arrangement, however, introduces complications and partly neutralizes the advantages above enumerated.

The maximum efficiency of a good windmill is only about 35 per cent. As, however, the wind costs nothing, the loss of the other 65 per cent is potential rather than actual. The largest wind wheels constructed are about 60 feet in diameter.

The above is probably pretty near right; but is it really true that our best up-to-date windmills get only about *35 per cent* of the power of the wind?

The statement below, clipped from the Rural New-Yorker (for January 6), my lifelong favorite periodical, you may be sure arrested my attention:

*I lived in Mogadore, Summit County, Ohio, from the age of 5 to 12; then my father moved back to his farm in Medina County.

*Dear reader, try to contemplate what electricity is now doing for the world, and then think of "one hill of potatoes." Growing Irish potatoes has been more or less of a lifelong hobby of mine, but "one hill!" Oh, dear me!

Cheap Power for Ontario Farmers.

Windmill Electricity.—In some parts of the United States, particularly in the West, the use of windmills for generating electric power is fairly common. The cost of one of these plants is approximately $1,200, of which $275 is for a storage battery that will last about three years. On an average use of 500 kilowatt hours the power from the windmill dynamo would cost about 55 cents a kilowatt hour, and on the same consumption a No. 3 Ontario farm service would cost 27 cents. The average windmill plant is worn out at the end of eight years, and costs therefore about $125 a year, apart from the battery. These batteries would cost about $100 a year approximately. For what an Ontario farmer would pay $86 a year, the windmill-power producer pays about $225 a year.

While there are some things I don't quite understand in the above, it called forth the article below, which I clip from the Rural New-Yorker of March 10:

Wind Mill Electricity.

The article on page 4 seems to me to be hardly fair to the wind. I am an old man, and electricity from the wind has been my particular hobby for some years, so you and your readers can, if you choose, make some allowances. Six years ago my first windmill was installed. It not only lighted our humble Florida home beautifully, but charged my electric automobile so I ran it four or five miles every day, but as improved roads came I rather wanted to go more and a little further; so after two or three years, I put up a second windmill and installed a flatiron, heating pad to warm my feet, and a little foot stove at my desk, when we did not want to go to the trouble of building a fire. A year ago I added a "fireless electric cooker."

Now about this article, which gives the average life of windmills as eight years. Our wind wheels make only about 25 revolutions per minute, and run on roller bearings. With this slow motion, and properly cared for, the electric mill should last several times eight years. The writer also figures battery for three years. If the power (wind or engine) is applied while the work is being done, the battery has little to do, only to equalize the current. My batteries, six years old, are still doing good service. Of course, in towns and cities where current is offered at low rate, a windmill, or even a lighting outfit, may be a poor investment, but how about the farmer and small towns where there is no current to be had? A year ago, when I wanted still more current for my experiments, I installed engine and generator (cost about $175) to be used when the wind did not blow. The present winter so far has given less wind here in Florida than for the last six winters, and we never get the wind here they have in the far West. A gallon of kerosene that costs 15 cents here will run the electric auto about 15 miles, or a cent a mile. When there is no wind at all it takes about two gallons a day to furnish current to do all our work. With fair wind, the windmills save about 30 cents a day. But, hold on! When we have a big wind it stores the batteries enough to last two, three or even four days. When a breeze comes up in the forenoon when I am at work among my potatoes in the garden, it gives me several thrills, and one of these is the dollars it blows into my pockets on saving the kerosene. I think the maker of pumping windmills quotes cases where mills are now running that have run 20 or 30 years, with almost no expense. The principal expense of my mills has been the long rubber belt, that costs about $15, and is guaranteed for three years. A new windmill is, however, now just coming out, that needs no belt nor expensive gearing, and the one great wheel of slow motion pumps electricity exactly as a pumping mill pumps water. With any electric outfit for farm use, you must have a generator engine, batteries, switchboard, etc. The windmill simply takes the place of the engine. When I go up town or out in the country, I tell the people I feed my horse neither corn, oats, nor hay; I feed him on "wind."

Florida. A. I. Root.

On the editorial page of the same Rural New-Yorker we find the following from my long-time friend Collingwood:

Mr. Root, on page 380, makes out a fine story for windmill electricity. For many years this has been the dream of thousands who have lived more or less in darkness and with lack of power. Here is the wind blowing day by day over the farm. It costs nothing. Why not harness it, and make it generate electric current which shall light and heat our homes, turn our working wheels and drive our cars along the road? Why not? That's a fair question, and the idea of utilizing this cheap power is very attractive. But somehow it has not panned out. The general distribution of gasoline engines practically drove the windmill out of business. We rarely see one now. We have one that did good service for 20 years with little or no cost, yet we rarely use it. Can the windmill stage a comeback in the face of the gasoline engine? We doubt it, in spite of the fact that a few men like Mr. Root can make it go. Out on the breezy western plains would be the natural place for the electric windmill. We have spent some little time investigating, and the general opinion seems to be that, while the mills will develop the current, the original cost of the outfit is so great that, on the whole, a gasoline engine will be cheaper.

In conclusion: One drawback to the windmill is the necessity of a tall tower to get above surrounding objects. This is more or less true in most localities. If your residence is on a hill, or where there are no tall trees, this objection is not so serious. Other hindrances, I think, will be mostly met.

That Tobacco Pledge of Years Ago.

Cast thy bread upon the waters; for thou shalt find it after many days.—Ecc. 11:1.

On page 174, Gleanings for 1922, I explained about my offer of a bee-smoker to the boys of years ago who would give me their pledges (to be printed in Gleanings) to pay for the smoker if they ever used tobacco again. Every little while comes a reminder like the following:

Please find $1.00 enclosed to pay for Gleanings for one year. My subscription expired a month ago, and I was so busy that I neglected sending the money sooner.

I can't get along very well without Gleanings, as I have been a reader of the journal since 1878.

I was among the first men in Texas to order Root's goods in carload lots in the early eighties. I used to use tobacco, but I accepted Mr. Root's proposition to pay for a smoker which he sent me, if I used it again. It has now been 30 years, and I have never used tobacco since. I am very thankful to Mr. A. I. Root, for I am sure that this has prolonged my life. J. P. Caldwell.

Coleman, Tex., Oct. 12, 1922.

I suppose you have noticed that our friend saved quite a nice sum of money that might have been worse than wasted during the 30 years. And not only that, who knows of the benefit in the way of health, and, of more importance still, of the example he set to others—perhaps the boys of his own family?

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line, 8 words to the line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy, if credit has not been established previously.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

R. B. Daly, R. V. Cox, Ferd C. Ross, E. S. Miller, K. A. Gallant, W. B. Crane, S. V. Haswell, Earl Rulison, Meyer Toom, T. W. Livingston, T. W. Burleson, Weber Brothers Honey Co., Emile J. Beridon, Jr., J. P. Anthony, F. M. Russell, Jes Dalton, Adam Kalb, Van Wyngarden Bros., Electric Wheel Co., Lewis Roesch, J. J. Scott, Baughn Stone, W. H. Toppin, Progress Nurseries, M. P. Lemunyon, C. B. Howard, Kitselman Bros., Kerlin Grandview Poultry Farm, I. Putnam, American Poultry Journal, W. H. Laws, E. H. Taylor, S. J. Morrison.

HONEY AND WAX FOR SALE.

FOR SALE—White clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

CHOICE sweet clover honey in 5-lb. and 60-lb. cans. Allenville Apiaries, Allenville, Ala.

CHOICE white clover extracted honey in new 60-lb. cans. Sample 10c. D. R. Townsend, Northstar, Mich.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Clover, amber and basswood honey in new 60-lb. cans, 5 and 10 lb. pails. H. B. Gable, Romulus, N. Y.

FOR SALE—Very choice white clover extracted honey in 60-lb. cans, two to the case. J. Herman Pohl, Fowler, Mich.

FOR SALE—Send for sample of new clover-basswood honey in new 60-lb. cans. J. N. Harris, 502 W. Center St., St. Louis, Mich.

FOR SALE—Clover, amber and buckwheat honey in 5-lb. pails and 60-lb. cans. C. J. Baldridge, Homestead Farm, Kendaia, N. Y.

FOR SALE—Clover honey in 60-lb. cans or 5-lb. pails. Write for prices stating quantity desired. Sample, 10c. Wm. F. Vollmer, Akron, N. Y.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; white sage, 12c; extra L. A. sage, 10½c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

WE still have a good supply of "Townsend Quality" extracted honey for sale. New cans and cases and the price is right. E. D. Townsend & Sons, Northstar, Michigan.

FOR SALE—First class, pure extracted honey in 60-lb. cans. White 10c, dark 8c. Gilbert J. Sergeant, Sodus, N. Y.

FOR SALE at reduced prices, 100 cases of No. 1 white comb honey, also several tons of dark extracted. H. G. Quirin, Bellevue, Ohio.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and prices on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Michigan milkweed-raspberry white honey, mild and deliciously pleasing. In 60-lb. cans at 12½c per pound. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—White clover extracted honey in 60-lb. cans. Per case, net 120 lbs., $13.00. Also 500 lbs. of beeswax. Edw. A. Winkler, Joliet, R. D. No. 1, Ill.

HONEY—Fall and buckwheat honey mixed, 8c lb.; fruit bloom, 10c lb.; clover-basswood, 11c lb. All in 2 60's. Discount on dark in quantities. G. M. Brewer, Medina, N. Y.

FOR SALE—Choice clover extracted honey packed in new cans and cases in carload lots or less. Quality is unexcelled. Write for prices stating quantity desired. J. D. Beals, Oto, Iowa.

FOR SALE—Thirty cases buckwheat and sweet clover blend, twenty-five cases light amber. Good flavor and very heavy body. Put up in 60-lb. cans. Sample 10c. Also 400 five-lb. pails buckwheat, sweet clover blend. David Running, Filion, Mich.

FOR SALE—We have fine lots of white clover, sweet clover, basswood, buckwheat and amber honey. Tell us what you want. Prices and samples on request. Good second-hand cans, 60c per case of two cans. A. I. Root Co., 224 W. Huron St., Chicago, Ill.

FOR SALE—30,000 lbs. of white clover honey (not sweet clover) in new 60-lb. cans, two in case, at 12½c per lb., in 5-lb. pails, 12 in case at 80c per pail. $75.00 per 100, f. o. b. Waterville. Sample 15c. No better honey on the market. F. W. Summerfield, Waterville, Ohio.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction-top tin cans 1 dozen in case; 5-lb. friction-top tin cans, ½ dozen in case; 10-lb. friction-top tin cans, ½ dozen in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

HONEY AND WAX WANTED.

WANTED—Honey in ton lots, comb and extracted of all kinds, and maple syrup. Joe Mlinarits, 8931 Keller St., Detroit, Mich.

WANTED—5000 lbs. clover extracted honey, also domestic beeswax. I. J. Stringham, Glen Cove, N. Y.

WANTED—Comb and extracted honey, carload and less. All kinds of honey and beeswax for sale. Walter C. Morris, 105 Hudson St., New York.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

XUM

WANTED—Bulk comb and section honey, wool, black-walnut kernels, old and new geese feathers. J. E. Harris, Morristown, Tenn.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1923 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

WANTED—Beeswax. We will pay you the best market price in cash or exchange your beeswax for the famous AIRCO foundation for a very reasonable charge. Ship direct to us in double burlap sacks, marking each package plainly with your name and address on the inside and outside so we can identify the shipment and make prompt remittance. The A. I. Root Company, Medina, Ohio.

FOR SALE.

FOR SALE—Hubam clover seed. Write for prices. Noah Bordner, Holgate, Ohio.

FOR SALE—Pure Hubam clover seed. Edw. A. Winkler, Joliet, R. F. D. No. 1, Ill.

FOR SALE—New 160-lb. honey kegs at $1.12 each f. o. b. N. L. Stevens, Venice Center, N. Y.

ROOT bee supplies and AIRCO foundation for 1923. A. V. Small, successor to C. F. Buck, Augusta, Kans.

FOR SALE—A. I. Root Cowan honey extractor, two-frame $20 cash. Kenneth Sharpe, Wolcott, N. Y.

CONNECTICUT and Rhode Island headquarters for Root's beekeepers' supplies. A. W. Yates, Hartford, Conn.

FOR SALE—Honey cans used only once 2-60-lb. cans to the case, 60c. Joe Mlinarits, 8931 Keller St., Detroit, Mich.

FOR SALE—Comb foundation mill in good condition. For price write Mrs. J. Chapman, Mill Creek, W. Va.

FOR SALE—Automatic entrance bee feeders, also Canadian patent right. Descriptive circular free. L. H. Achenbach, Manufacturer, Pottsville, Pa.

FOR SALE—The Bowers adjustable division-boards. You take no risk. They are fully warranted and you the judge. F. D. Bowers, Sugar Grove, Pa.

FOR SALE—Good second-hand 60-lb. cans, two cans to case boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

INCREASE your extracted honey sales by using our Castone Container. Send us 16c in stamps for sample prepaid, or $1.00 per dozen, f. o. b. G. H. Price, Newark, New York.

GOOD second-hand 60-lb. honey cans for sale. We liquefy honey by dry heat. Cans have not been in water. Boxed 2 in a case. 50c per case f. o. b. Dewey, Cash with order. M. H. Hill, Dewey, Okla.

FOR SALE—1600 section-holders for Danz. sections, 1800 M fences, 400 supports for section-holders, 400 super springs. The inside fixtures for 200 ten-frame supers for Danz. sections, 4x5x1⅜. Have been used 1 or 2 seasons and are like new. Will take $75.00 for lot. Earl L. Baker, Lake City, Mich.

FOR SALE—50 Boardman feeders with caps, in lots to suit. Good as new, 14c each. Merton Church, Highland Park, Ill.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

HONEY-NUT CHOCOLATES. A new and delicious confection made of pure honey, nuts, fruits, etc. $1.00 lb., 50c ½ lb., postpaid. Wholesale prices on application. J. D. Kroha 87 North St., Danbury, Conn.

FOR SALE—26 A. I. Root Buckeye hives, complete; 1 extracting shallow super, frames and comb; 1 comb-honey super, KD boxes; 10 extra Hoffman frames; 7 queen-excluders, wire and wood; 7 Porter double bee-escapes; 6 hive-stands; 1 Root 2-frame reversible extractor; 1 Standard smoker; 1 Root steel hive-tool, 7-inch; 1 Boardman feeder with cap; 1 spur wire imbedder; 1 introducing cage. C. Dunn Williams, Jamesport, N. Y.

FOR SALE—5000 extracting supers for Hoffman frames, 50c each; 40,000 improved Hoffman frames, 2c each; 10,000 Hoffman frames with Dadant's light brood foundation, 7½c each; 1000 No. 1 metal top covers, 50c each; 1000 wood tops, 10c each; 1000 No. 1 bottoms, 15c each; 1000 queen-excluders (zinc) 25c each; 500 Boardman feeders, 5c each; 300 Alexander feeders, 10c each; 200 Doolittle division-board feeders, 5c each; 100 heavy winter tops with packing and metal covering, 50c each; 500 queen-rearing nuclei boxes for 3 and 4 frames, 10c each. All in No. 1 shape and ready for inspection. W. B. Wallin, Brooksville, Ky.

WANTS AND EXCHANGES.

WANTED—Second-hand two-frame honey-extractor. Fritz Erickson, Brockwayville, R. F. D. No. 2, Pa.

WILL exchange package bees or nuclei for Barnes or similar beehive circular saw rig, also small engine. J. L. Morgan, Apalachicola, Fla.

FOR SALE OR EXCHANGE—60 cases good second-hand 60-lb. cans for two cases. Clover honey. H. Lauzon, 641 Peterboro, Detroit, Mich.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

WHEN IT'S GOLDEN, IT'S PHELPS.—C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—40 colonies of Italians, guaranteed, $10.00 each for bunch. J. F. Coyle, Penfield, Ill.

INSURE a honey crop. Buy SIMMONS QUEENS and NUCLEI. Fairmount Apiary, Livingston, N. Y.

ITALIAN QUEENS. Untested, $1.25; tested, $2.00. After June 1. J. D. Kroha, 87 North St., Danbury, Conn.

I AM ready to fill orders at reduced prices. Caucasian or Italian 3-frame nuclei and queens. Peter Schaffhouser, Havelock, N. Car.

THE highest-priced queens on record. See larger ad elsewhere. J. M. Cutts & Son, Montgomery, Ala.

FOR SALE—Bees and queens, any size or kind of package, from one to carload. F. M. Morgan, Hamburg, La.

IF you want full-weight packages choice Italian queens, quick service cheap, write to F. M. Morgan, Hamburg, La.

FOR SALE—Again this May a few colonies of good strong Italians in 10-frame bodies. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

THREE-BANDED and Golden Queens. Finest select Italian. 1 queen, $1.00; 6, $5.00; 12, $9.00. G. H. Merrill, Greenville, R. D. No. 5, S. C.

FOR SALE—150 colonies of certified Italian bees in 8-L. frame shipping hives. Under state supervision 22 years. Charles Stewart, Box 42, Johnstown, N. Y.

SHE-SUITS-ME QUEENS, 1923, after June 1, $1.50 each. One dollar per queen when ordered four weeks or more in advance. Allen Latham, Norwichtown, Conn.

MY famous three-banded Italian untested queens, May 1, 1, $1.25; 6, $7.00. J. W. Romberger, Queen Breeder, 3113 Locust St., St. Joseph, Mo.

PACKAGE bees nearer home, save express. 2 lbs. bees and Italian queens on frame of foundation, $5.75. Write for queen circular. The Scott Apiaries, La Grange, Indiana.

REGARDING THE SALE OF BEES ON COMBS.

There is danger of transmitting disease by shipping bees on combs.

It is so serious a matter that we ourselves no longer advertise to ship to customers any bees on drawn combs except in carload quantities under special conditions. Acordingly, we shall hereafter require from all persons advertising the sale of bees in whole colonies that they guarantee in their advertisements that the bees they advertise are free from all disease. We want the word "guarantee" used in all such advertisements.

THE A. I. ROOT COMPANY,
Publishers, Gleanings in Bee Culture.

PINARD'S quality of Italian queens and package bees. Laying untested queens, $1.00 each. Write for prices on large lots. Circular free. A. J. Pinard, Morgan Hill, Calif.

WE are booking orders now for spring delivery for the famous "Colorado Bred Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

BEES BY THE POUND—Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

FOR SALE—Three-banded Italian queens, untested, $1.25 each; $12.00 per doz.; 2-lb. package of bees, $4.00, with queen $5.00. Guarantee satisfaction. J. Allen, Catherine, Ala.

WE are booking orders now for spring delivery. Bright Italian queens, untested, $1.00; 6, $5.00; 100, $75.00. Virgins, 50c each; 100 $40.00. P. B. Skinner, Greenville, R. F. D. 5, Ala.

BUY from shipper farthest north. Get hardy stock and save expressage. Dr. Miller's strain. Three-frame nuclei and tested queen, $5.00; select tested, $6.00. Satisfaction guaranteed. 20 years at it. Orders booked for spring delivery by S. G. Crocker, Jr., Roland Park, Baltimore, Md.

WARRANTED pure mated Italian queens. How many queens have you lost by introducing? My special mailing cage never fails. No honey is used in candy. No danger of disease. $1.25 each. Send me your order now. Pay when you want them. Can send about June 1. Daniel Danielsen, Brush, Colo.

FOR SALE—20 colonies of bees, 10-frame metal cover hives, wired frames with full sheets of foundation. No disease. Hugh C. Todd, Speedwell, Ky.

My five-banded Golden queens will be ready April 1. 1 queen, $1.00; 6 queens, $5.50; 12 queens $10.00. W. W. Talley, Greenville, R. D. No. 4, Ala.

WHEN better queens are raised Victor will raise them. Three-banded Italians only. Price, $1.00 each. Julius Victor, R. F. D., No. 36, Box 22, Middleport, N. Y. Formerly at Martinsville, N. Y.

THREE-BANDED Italian queens ready to mail about May 20. Untested queens, $1.25 each; 6, $7.00; 12, $13.50. Tested queens, $2.50 each. Safe arrival and satisfaction guaranteed. Robt. B. Spicer, Wharton, N. J.

CALIFORNIA package bees $1.50 per lb., Italian queens, $1.25 each, 6 for $7, 25 at $1 each, 100 at 90c each. Write for quantity price on package bees. C. F. Alexander, 180 Arleta Ave., San Jose, Calif.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

GOLDEN QUEENS that produce large beautiful bees solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

BUY your breeding queens of Townsend and get the benefit of 33 years "line breeding" by the SHAWS. See Bulletin No. 3 on page 363 of this number of Gleanings. E. D. Townsend, Lorenauville, La.

THREE-BANDED bees and queens. 2-lb. package with select queen, $5.00, without queen, $4.00. Tested queens, $2.00; untested, $1.25 each or $10.00 per dozen. Carolina Bee Co., W. O. Curtis, Mgr., R. F. D. 1, Graham, N. C.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.25; 6, $7.00; 12, $12.50; 50, $50.00; 100, $95.00. Tested, 1, $2.00; 6, $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

HALF interest in 350 colonies bees in 10-fr. hives and equipment for 600 colonies. Four outyards, continual flow spring to fall, clover, raspberry, basswood, fireweed, goldenrod and aster. 200 and 300 lbs. a colony not unusual. D. A. Blanchard, Antigo, Wis.

BEELINE QUEENS—Pure Golden Italians of select quality. Untested, $1.50 each; 6 for $8.00; select untested, $2.00 each; 6 for $10; select tested, $3.00 each; 6 for $15. Prompt deliveries after May 1. Free descriptive booklet. Majors Nordan, Kimberly, Ala.

BRIGHT ITALIAN BEES and QUEENS ready April 10. Untested queen, 1, $1.00; 12 $10.00; 1-lb. package with queen, $3.00; 2-lb. package with queen, $5.00. No disease. Safe arrival guaranteed. T. J. Talley, R. F. D. 3, Greenville, Ala.

FOR SALE—Bright three-banded Italian queens, 1 to 12, $1.25 each; 13 to 25, $1.15 each. 10 per cent discount when ordered four weeks or more in advance. Safe arrival and satisfaction guaranteed, ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

GOLDEN ITALIAN QUEENS FOR 1923, the bright kind. Satisfaction guaranteed. Will begin shipping about April 1. Price untested, $1.00 each; $10.00 per doz.; 100, $75.00. Tested, $1.75 each. E. F. Day, Honoraville, Ala.

XUM

POUND PACKAGES, NUCLEI and QUEENS 2-lb. package of bees or 2-frame nuclei with young Italian queen, $3.50 each. Brazos Valley Apiaries, H. E. Graham, Prop., Gause, Texas.

FOR SALE—Golden Italian queens, high in quality but low in price; untested, $1.15; 6 $6.50; 12 or more, $1.00 each; select untested, $1.50; tested, $2.00 each. No disease. Safe arrival. Hazel V. Bonkemeyer, Randleman, R. F. D. No. 2, N. C.

FOR SALE—Italian queens, $1.00 each; 12, $11.00; 100, $80.00. One 3-fr. nucleus, $5.00, with queen; 3 lbs. of bees, $6.00. All orders booked with 10 per cent by June 1, 5 per cent discount. Orders delivered at once. Hickory Shade Apiary, Otterville, Mo.

HOLLOPETER'S quality queens plus satisfactory service make poor seasons better. Choice untested queens from finest three-banded stock. June, each, $1.50; 6, $7.50; 5 per cent books order and insures timely delivery. Circular. J. B. Hollopeter, Rockton, Pa.

FOR SALE—Golden Italian queens, 1 for $1.15; 6 for $6.50; 12 or more, $1.00 each; tested $2.00 each; select tested, $3.00 each; no disease of any kind. Safe arrival and satisfaction guaranteed. Will begin filling orders about May 1. Sam Hinshaw, Randleman, N. C.

HIGH-GRADE QUEENS — Three-banded Italians, also golden. Untested, 1, $1.25; 6, $6.50; 12 $12. Tested, 1, $2.00; 6, $11.50; 12, $22. Carniolan queens, package bees. Safe arrival pure mating and satisfaction guaranteed. No disease. P. O. Watkins, Cullasaja, N. C.

QUEENS OF QUALITY—Golden Italian only. Untested, $1.25 each; 6, $7.00; select untested, $1.50; tested, $2.50; 1-lb. package of bees with queen, $3.00; 2-lb. package with queen, $5.00; 3-lb. package with queen, $7.00. Safe arrival guaranteed. E. A. Simmons, Greenville, Ala.

PACKAGE BEES—2000 big, strong healthy colonies will be ready to supply PACKAGE BEES in the spring. Italian or Carniolan QUEENS. Let me quote prices and book your order early. A small deposit reserves shipping date. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Golden Italian queens, untested, $1.15; 6, $6.50; 12 or more, $1.00 each; tested, $2.00; select tested, $3.00. After June 30, untested $1.00; 6, $5.40; 12 or more, 80c each; tested, $1.50; select tested, $2.50. No disease of any kind. D. T. Gaster, Randleman, R. F. D. No. 2, N. C.

WE are offering "Reared in Season" select untested Italian queens at $1.00 each in quantities of 1 to 4. For 5 to 10 queens, 90c each; 11 to 24 queens, 85c each; 25 to 49 queens, 80c each. For 50 and more, 75c each. A better price after June 1. Write for circular. R. V. Stearns, Brady, Texas.

WHILE WE CONSIDER the PHELPS GOLDENS the most gentle, hardy and the best honey-gatherers, we have decided to furnish those who desire them the three-banded queens at $1.00 each. These will be PHELPS QUALITY and reared several miles from our golden yards. C. W. Phelps & Son, Binghamton N. Y.

IF you breed from somebody's best queen and mate her with somebody's best drone, you will reap "sports." Get in the game right by breeding from the SHAW "line bred" strain of three-banded Italians. They have been bred all these 33 years from one strain of Imported Italian stock. No other blood has been introduced during this third of a century. Bulletin No. 3 on page 363 of this number of Gleanings will tell you more about this wonderful strain of three-banded Italian bees. Townsend says it's so! E. D. Townsend, Loreauville, La.

FOR SALE—I am booking orders now for Italian bees and queens. One 3-frame nucleus with one pound of bees and untested queen, $5.00. I will be ready to ship by April 15. Inspector's certificate will accompany each shipment. Safe delivery and satisfaction guaranteed. J. E. Arthur, Register, R. F. D. No. 1, Ga.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00 or $18.00 per dozen; tested, $5.00. Breeders, $10.00 to $20.00. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Golden queens of 15 years' careful breeding; untested, $1.25 each; 6 for $7.00. Tested, $2.00 each. One-lb. package with untested queen, delivered, $3.25; two-lb. package with untested queen, delivered, $5.00. Promptness and satisfaction my motto. Shipments beginning about April 15. R. O. Cox Box 25, Rutledge, Ala.

THE STAPLETON APIARIES are located in south Georgia, near the Florida line, and we are in position to make early shipments of both bees and queens. Queen-rearing yard is in charge of Mr. A. S. Blanks, who has had eight years' experience. See display advertisement in this issue for prices. N. L. Stapleton, Colquitt, Ga.

FOR SALE—Italian bees. Full colony in modern 10-frame hive for May delivery, $13; 2-frame nucleus, $5.75; 2-pound package, $4.75. Prices for June, 10-frame hive, $11.50; 2-frame nucleus, $4.50; 2-pound package, $3.75. Complete modern apiary of 70 colonies in A No. 1 condition. Will sell for less than price of equipment. Write for particulars. King's Apiaries, McArthur, Ohio.

OWEN QUEENS AND BEES from the famous golden strain, absolutely first quality. Untested, $1.00 each; 6 for $5.00. 1-lb. package with queen, $3.00; 2-lb., $5.00. Our bees are wonderful honey-gatherers. Others perhaps as good, but none better. Safe arrival and satisfaction guaranteed. Powell Owen, Greenville, Ala.

ITALIAN QUEENS, PACKAGE BEES and NUCLEI—We have been shipping queens, combless bees and nuclei from here for the past eighteen years. They give satisfaction. Customers recommend us to their friends. Have nearly 1000 colonies to draw from. Three-banded Italian queens, untested, $1.00; tested, $2.00. For prices of breeders, nuclei and package bees, write for price list. Allenville Apiaries, Allenville, Ala.

FOR SALE—In whole or part. I'm sold down to about 200 colonies of bees, 800 10-fr. supers (8 frames each) with drawn wired foundation combs, 8-frame Root power extractor, 2½-H. P. engine, 3 Lobee rotary pumps, saw table, 150 new 10-frame hives in KD of Michigan white pine, and various other articles. The two yards can remain as located. Terms if desired, with suitable backing. Reason for selling, old age and laziness. A. W. Smith, Birmingham, Mich.

PACKAGE BEES AND NUCLEI—I offer for sale 400 4-lb. packages of bees, each package containing an untested three-banded Italian queen and a comb of brood and honey for feed in transit. Also two-frame nuclei with two pounds of bees and an untested three-banded Italian queen included therein. Certificate of health with each shipment. Safe delivery guaranteed. I quote as follows: For delivery between April 5 and July 1, from 300 to 400 packages, $5.00 each; nuclei, from 100 to 500 nuclei, $4.00 each. Book your order at once as the supply is limited. Address John St. Romain, Marksville, La.

HEAVY DISCOUNTS on package bees, nuclei and queens after May 15. Write for prices. J. J. Scott, Crowville, La.

WRITE for circular of our "Reared in Season" Italian queens. We want to tell you about them and why they are good. Also why we can sell them cheaper after June 1. R. V. Stearns, Brady, Texas.

I AM booking orders for three-banded Italian queens for May 30 and after. My strain of bees hold the Indiana record for comb honey per colony, in a run of ten years. Send for booklet and prices. Charles Kennard, Knightstown, Indiana.

THREE-BANDED ITALIAN QUEENS—Select untested, $1.00 each; $10.00 per dozen. 1-lb. package, with queen, $2.50; 2-lb. package, with queen, $4.00; 3-lb. package, with queen, $4.50. No disease. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

RUSH yqur order. Pure Italian queens. Selected untested 1, 90c; 12, $10.00; 100, $70. Selected tested, 1, $1.35; 12, $14.00. Safe arrival and satisfaction guaranteed. No disease. Ship nothing but the best. W. C. Smith & Co., Calhoun, Ala.

QUEENS and PACKAGE bees, the producing kind. Prompt shipment after April 15. Satisfaction guaranteed. Circular free. Select Italian queens, $1.00 each; $10.00 dozen. Two-pound packages with queen, $4.50 each. P. M. Williams, Ft. Deposit, Ala.

GOLDEN ITALIAN queens none better, 1, $1.00; 6, $5.00; 12, $10.00; select, 1, $1.25; 6, $7.00; 12, $13.00. Virgins, 60c; 12, $5.00. Clipped when requested. Ready April 15. Money back if not satisfied. Crenshaw County Apiary, Rutledge, Ala.

PACKAGES, 2 lbs. with queen, $4.00, in lots of 10; $4.25 in lots of 6; single $4.50. Shipped on Hoffman frames, April 15 to June 1. Choice healthy Italians. Everything guaranteed. Order now with remittance. R. S. Knight, R. F. D., No. 2, New Orleans, La.

NORTH CAROLINA bred Italian queens of the Root and Miller strain of three-banded Italian bees, gentle and good honey-gatherers. From May 1 to July 1, untested, $1.25 each; $12.00 per doz; tested, $1.75 each and selected tested, $2.75 each. Safe arrival and satisfaction guaranteed. L. Parker, Benson, R. F. D. No. 2, N. C.

DAY BY DAY in every way our queens please our customers. We have spent years in breeding our queens for production and quality. Satisfaction guaranteed. Booking orders now. Start shipping May 15. Pure three-banded Italians, untested, $1.00; 25 or more, 90c; tested, $2.00; 25 or more, $1.75. Rule Brothers, Terlton, R. F. D. No. 1, Box 30, Okla.

THREE-BAND ITALIANS—My stock is developed by continuous selection from the best and most popular strains in the country. When I can produce or discover better they will be adopted. Queens untested after May 15, $1.50 each, six for $8. Tested, $2.50 each. CARNITALIANS, a cross derived from pure imported Carniolan mothers and Italian drones, tested, June 1, $2.50 each. Protheroe, Rustburg, Va.

200 COLONIES of three-banded, leather-colored Italian bees for sale. Descended from the celebrated Moore strain, are gentle and good workers with tested queens less than one year old. All good worker combs in 10-frame Langstroth hives. Price per colony, $12.00 each. Bees will be shipped as soon as the weather is suitable. Elmer Hutchinson & Son, Lake City, Mich.

BEES IN PACKAGES—May and June shipment. Two pounds bees on a standard frame, brood and honey, $3.00; 3 pounds bees, same as above, $4.00. Above prices are on lots of 10 or more. Three-banded Italian queens, untested, $1.00, tested, $1.50 each. Two and three frame nuclei, same price as packages. 10% to book order, balance before shipping. Guarantee safe delivery, and no disease. L. C. Mayeux, Hamburg, La.

PACKAGE BEES FOR 1923 — Three-band Italians, bred for business. A 2-lb. package of the Yancey hustlers with a select untested queen for $5.00; 25 or more, $4.75 each. Attractive prices on large lots. One-fifth cash books your order. Order early and make sure of shipping dates. We do not accept more orders than we can fill promptly. Caney Valley Apiaries, Bay City, Texas, Yancey Bros., owners.

GOLDEN ITALIAN QUEENS, package bees and nuclei, ready April 1 to 15. Untested queens, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. 2-frame nuclei with queen, $5.00; 1-lb. package with queen, $3.00; 2-lb. package with queen, $5.00. 12 or more packages, 5 per cent discount. No disease, safe arrival guaranteed. 20 per cent to book orders for spring delivery. J. F. Rogers, Greenville, R. F. D. 3, Ala.

IF you want good, bright Italian queens by return mail, send your order to us. $1.00 each $11.00 per doz., $80.00 per 100. 1-lb. bees with queen, $3.00; 2-lb. bees with queen $5.00. No disease in our apiaries. Safe arrival pure mating and reasonable satisfaction guaranteed. We pay delivery charges on package bees up to 1000 miles. Guarantee covers U. S. and Canada on safe arrival. Graydon Brothers, Greenville, R. F. D. No. 4, Ala.

ITALIAN BEES, queens and nuclei, April 1 to June 1. Special two-pound package on frame emerging brood with queen introduced and laying en route, $4.75. Regular two-pound package. $4.00. Three-pound, $5.00, including select untested or tested queen. Nuclei same price. Bright untested three-band queens, $1.25 each; 6, $7.00; 12, $12.00; 20% books order. State health certificate with each order. Safe arrival guaranteed. J. L. Morgan, Apalachicola, Fla., formerly Tupelo Honey Co., Columbia, Ala.

FOR SALE—3-banded Italian queens of best quality. I am taking in with me as owner of half my bee business Mr. D. E. Shaner, vocational student from Greensboro Agricultural and Apicultural Institute of Alabama. We expect to retain the same motto, "Clean, honest and square dealings" as I have kept up in the past. This is my 23rd season with the bees, 12th year of queen-breeding. Prices: one for $1.25; six for $7; 12 for $13. Health certificate. Curd Walker & Shaner, Queen-breeders, Scotts Station, Ala.

BEES IN PACKAGES.—Vigorous Italian queens and bees in packages and nuclei, pure three-banded stock, standard nuclei that fit Root standard hives. My 3-frame nuclei are superior to 3-pound combless packages. Bees positively healthy. Queens are thoroughbreds, and are young and laying. Safe arrival or replacement. 3-lb. package with queen, 1 to 20, $5.25; 25 or more, $4.90; 3-fr. nucleus with queen, 1 to 20, $5.25; 25 or more, $4.90. Terms: Cash with order. State name of express station. C. M. Elfer, St. Rose, La.

TRY THE ACHORD STRAIN OF ITALIANS —They have helped produce wonderful honey crops in many states. Good-natured, nicely marked, vigorous, three-banded Italians. Bred in two of the largest, best-equipped queen-rearing apiaries in the South, and shipped to you in clean convenient, up-to-date packages, with full instructions for hiving. Delivery April 15 and later. Express or mail shipment. By express: 1-lb. bees, $2.25 each; twenty-five or more, $2.15 each. 2-lb. bees, $3.75 each; twenty-five or more, $3.50 each. 3-lb. bees,

XUM

$5.25 each; twenty-five or more, $5.00 each. If wanted by parcel post add 15c each to the price of the 1-lb. size and 25c each to two and three lb. sizes. Also add postage. Mailing weight of the one, two and three pound packages is four, six and eight pounds each, respectively. Select untested queens for the above packages or for mailing, $1.25 each; ten, $11.50; twenty-five, $25.00. Young tested queens $1.75 each. Order early and state date you wish shipment. You will not be disappointed in the stock and service we give you. For a more complete descriptive price list send a postal with your address. W. D. Achord, Fitzpatrick, Ala.

MISCELLANEOUS.

PURE maple syrup in 1-gal. cans. Write for prices. Ivan Harvey, Cincinnatus, N. Y.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a post card today. It is well worth your little trouble.

HELP WANTED.

WANTED—Man of some experience to work with bees; give age, experience, wages. Address Rocky Mountain Bee Co., Billings, Mont.

YOUNG man wants job with Ontario beekeeper. Can handle bees. Character and habits bear any inquiry. Wage not first consideration. Write A. C. Askew, 92 Pearl St. N., Hamilton, Ont., Can.

SITUATION WANTED.

SITUATION WANTED for season of 1923 from May till Nov., with a specialist beekeeper as helper. Some experience, West preferred. F. Kelly, care John Seaich, 151 West South Temple, Salt Lake City, Utah.

WANTED—A position in inspection, extension, teaching beekeeping, or managing a commercial apiary by a middle-aged married man. University of Wisconsin graduate. Master's degree. Special training in entomology, bacteriology and beekeeping. Experience in apiculture, inspection and teaching beekeeping. Foul brood my specialty. Write for particulars. H. G. Ahrens, 310 South Charter St., Madison, Wis.

New England Beekeepers

If you want the best there are in supplies send in your order, we have them here. Don't wait till the rush is on, send today. We have everything for the beekeeper. Our catalog is yours for the asking.

H. H. JEPSON,
182 Friend St. Boston, 14, Mass.

BEES AND ROOT QUALITY SUPPLIES.

We have a large and most complete stock of beekeepers' supplies now ready for immediate delivery. Order early and have your supplies on hand when the bees need them. Supplies exchanged for wax. Write for catalog.

A. M. MOORE, ZANESVILLE, OHIO.

MASON BEE SUPPLY COMPANY,

Mechanic Falls, Maine.

From 1897 to 1923 the Northeastern Branch of The A. I. Root Company.

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1923 catalog send name at once.

BEEKEEPERS' SUPPLIES

The kind you want and bees need. Good stock of the A. I. Root Co.'s make of goods on hand. Catalog free. Beeswax wanted.

J. NEBEL & SON SUPPLY CO., High Hill, Mo.

The Apiarist's Friend,
GERMAN SCYTHES AND SICKLES.
Permit the maximum work with the minimum disturbance of the colonies. Catalog on request.
THE MARUGG CO., Dept. B, Tracy City, Tenn.

HONEY-BRED QUEENS

We make no extravagant claims for our queens, but there are several facts relative to them we want you to know and which we back with an absolute guarantee. Honey-bred queens are superior to those raised under an artificial sugar flow. We have the purest breeding queens obtainable in Italy, raised under ideal conditions in one of the largest queen-rearing sections of the world. At the head of the queen-rearing is Huber Forehand, son of one of the pioneers in queen-breeding. We have both the Golden Italians and Three-band Italians. Safe arrival and satisfaction absolutely guaranteed.

QUEENS—Untested, 1 to 11, 85c; 12 to 24, 80c; 25 and over, 75c. Select Untested, 1 to 11, $1.25; 12 to 24, $1.10; 25 and over, $1.00. Tested, $1.75 each.

POUND PACKAGES.—1 pound without queen, $2.25; 2 pounds without queen, $3.25; 1 pound with queen, $3.00; 2 pounds with queen, $4.00.

FOREHAND & POOLE, Mussel, Ala.

HIGH GRADE ITALIAN QUEENS

BY RETURN MAIL
3-BANDED
LEATHER-COLORED
BRIGHT YELLOW

Last season we added two breeding queens to ours, one from The A. I. Root Co. and one from Jay Smith, and are rearing queens from them in separate yards. We rear our queens by the Doolittle method in very strong colonies, and mate them in strong nuclei containing 4 standard frames, which insures as good queens as can be produced.

	1 to 9.	10 to 24.	25 to 50.
Unt. Queens.	$1.25 ea.	$1.15 ea.	$1.10 ea.
Sel. Untest.	1.50 ea.	1.40 ea.	1.35 ea.
Sel. Test. ..	2.25 ea.		

FRANK BORNHOFFER
MT. WASHINGTON (CINCINNATI), OHIO

Buying Queens From Us Is Like Buying Them From Italy

We are the only breeder in America that advertises a queen yard composed of queens from Italy only. We are breeding from several of the famous strains of breeders from Italy and mating them to imported drones. This dark strain of three bands are prolific, disease-resistant gentle and great honey gatherers. We are going to strive to give you queens as pure as if you had purchased them from Italy.

Thagard's Italian Queens
Bred for Quality

Will gather a big honey crop for you. They have stood the test in the past. This famous strain originated from imported stock. Our free circular tells you about our three races of Italians. Safe arrival and satisfaction guaranteed.
Imported Strain: 1 to 5, $2.00; 6 to 11, $1.50; 12 up, $1.40.
Thagard's Strain: 1 to 5, $1.00; 6 to 11, 90c; 12 up, 85c.

The U. R. Thagard Co.
Greenville, Ala.

Scott Queens are Good Queens

THEY SURE DO GET THE HONEY! One customer writes: "Dear Mr. Scott: Got a queen from you last fall, and her colony filled five supers this summer. Yours truly." (Name on request.) THEY WILL DO AS WELL FOR YOU. Untested queens, Golden or Three-Banded: One, $1.50; six, $8.00. Ready June 1. Pure mating, safe arrival and satisfaction. Write for circular.

THE SCOTT APIARIES, LAGRANGE, INDIANA.

POUND PACKAGES, NUCLEI AND QUEENS

Queens bred from the best strains of three-banded Golden Italians, and there is none better. Capacity, 4000 packages or nuclei. Descriptive circular free. 10 per cent books order for special shipping date. All orders shipped promptly on date agreed.

2-lb. package of Italian Bees or 2-frame Nuclei with young Italian queen, $4.00 each, 10 or more, $3.75 each. 3-lb. package of Italian Bees or 3-frame Nuclei with young Italian queen, $4.75 each; 10 or more, $4.25 each. 2-lb. package of Hybrid Bees or 2-frame Nuclei with young Italian queen, $3.75 each; 10 or more, $3.50 each. 3-lb. package of Hybrid Bees or 3-frame Nuclei with young Italian queen, $4.25 each; 10 or more, $4.00 each. One-frame Nuclei, one pound extra Italian Bees and young Italian queen, $3.50 each; 10 or more, $3.25 each. One-frame Nuclei, one pound extra hybrid bees and young Italian queen, $3.25 each; 10 or more, $3.00 each. Young untested Italian queens, state strain wanted. The offer on hybrid bees is a material saving to the purchaser, as the queens are as purely mated Italian queens as can be had. I have only a limited amount of hybrids to offer.

BRAZOS VALLEY APIARIES, GAUSE, TEXAS. **H. E. GRAHAM, Proprietor.**

XUM

PRICE ANNOUNCEMENT.

Notwithstanding the recent heavy advances in the price of lumber, we hope we shall not be obliged to advance our price on hives, supers, frames, sections, or on other lumber goods for the present. We try to believe that the serious inflation now taking place will not be of long duration, and that our present stocks of pine and basswood will carry us over until towards the end of the season.

Unfortunately metal has also advanced sharply in price, and we have had to make recent purchases. This has compelled us to advance our prices on some items composed chiefly of metal, and a uniform 10 per cent advance on prices as listed in our 1923 catalog went into effect April 15, on the following items:

All extractors, as listed in our catalog.
Honey storage tanks.
The Root capping-melter with table KD No. D472801.
The Root uncapping-can, No. D472811.
The Root uncapping-can and wax press, No. D472804.
The Root-Hatch wax press, Nos. D472809, D472806.

THE A. I. ROOT COMPANY.
Medina, Ohio.

A PLAIN TALK ABOUT WAX AND COMB FOUNDATION.

The melting point of pure beeswax varies considerably. Combs built from beeswax having a relatively high melting point, do not readily sag nor melt down in the heat of the beehive. The melting point of domestic beeswax is often too low to start with. Furthermore, there is not enough domestic beeswax produced in the United States to supply the demand, and some of the foreign wax has a melting point below that of average domestic beeswax. We have used small proportions of this ourselves, but we view with much alarm the extensive use of foreign beeswax of low melting point, by many manufacturers. Such practice can have but one result—the lowering of the melting point of domestic beeswax.

We sell thousands of pounds of beeswax to commercial users of this commodity, and we know that a higher melting point is desirable. The center ply of Three-ply AIRCO, as we have announced to the trade, contains a small proportion of pure vegetable wax. While there is no need of Three-ply foundation for comb honey today, vegetable wax is just as pure and healthful as beeswax. The addition of the vegetable wax in brood foundation strengthens and toughens the wax; and even if enough of these combs should ultimately be rendered, to slightly modify average beeswax (which is not probable), the change would be in the right direction. From the standpoint of both the commercial user of beeswax and the user of comb foundation, the addition of a small percentage of vegetable wax is a distinct advantage, improving as it does the quality and standard of domestic beeswax.

In no sense can this vegetable wax be called an adulterant. The vegetable wax is just as expensive and just as pure as beeswax. Three-ply beeswax is no more adulterated than is bronze, nickel steel or even steel itself, all of which have other metals or ingredients added to the base metal. Pure iron alone is not tough enough to hold a cutting edge. Likewise beeswax alone is not tough enough to sustain, without stretching, a heavy comb of brood in the average beehive as used today. If we could go back to the hollow tree with its thick wall of half-rotted wood, and to the irregular, crooked, immovable combs, well reinforced and tied by frequent brace combs, the need for tougher wax would not be so urgent. But the conditions have changed, making necessary for full depth combs a tougher midrib that will successfully resist the dragging weight of the heavy brood, without stretching the cells to distortion. The small percentage of vegetable wax supplies the element needed for great strength—just as carbon gives toughness to the soft iron and the nickel a new character to the steel. In no sense are these elements considered as adulterations to the base metal, iron.

Any beekeeper who has wax for sale which has been rendered from combs built on Three-ply AIRCO, can expect to receive the same market price as for any beeswax. We know such beeswax is better for the center ply of our Three-ply foundation and for commercial purposes, therefore we want every pound of it that we can get. It is true, of course, that since drone cells will be negligible, there will be few Three-ply combs to melt, except such as are damaged through carelessness or because of disease. But we guarantee to take all wax offered us from Three-ply combs at the highest market price for beeswax.

THE A. I. ROOT COMPANY,
Medina, Ohio.

PATENTS.

I make a specialty of patents, trade-marks and copyrights. Protect and profit by your ideas. Advice and terms on request. Eleven years' active practice before U. S. Patent office. Write today. Lester L. Sargent, patent lawyer, 524 Tenth St., Washington, D. C.

LETTER HEADS AND ENVELOPES.

Your personal representatives—we make them look fine. Try us. Send for free sample book. THE A. I. ROOT CO., West Side Sta., Medina, Ohio.

HONEY

Beekeepers who have sold their own crop and have a steady trade for Honey should buy Honey to fill this demand. It helps to keep their own customers from going elsewhere and also tends to keep Honey prices stabilized.

In 60-lb. Tins—White Orange, 13c a lb; White Sage, 12c lb. Extra L. A. Sage, 10½c lb.

Glass and Tin Honey Containers.

2½-lb. cans, crates of 100.....$4.50
5-lb. pails (with handles) crates of 100 7.00
10-lb. pails (with handles) crates of 50 5.25
60-lb. tins,2 in case, new 1.20 case, used 25c

White Flint Glass, With Gold Lacquered Wax Lined Caps.

8-oz. honey capac., $1.50 carton of 3 doz.
16-oz. honey capac., $1.20 carton of 2 doz.
Qt. 3-lb. honey capac., 90c carton of 1 doz.

HOFFMAN & HAUCK, INC., WOODHAVEN, NEW YORK.

Here Is Your Chance

From factory to you, our excellent made material at attractive prices.

Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

Langstroth portico 8 and 10 frame hives and supers, also 8-frame 4 x 5 comb-honey supers at cost prices while they last.

Charles Mondeng

146 Newton Ave. N. and 159 Cedar Lake Road.

MINNEAPOLIS, MINN.

TRADE NOTES.

Inasmuch as we expect to discontinue listing the following articles in our general catalog we are offering them at a big reduction in order to close out our present stock.

For Shipment from Medina, Ohio.

4 one-half-inch honey pumps. Price each complete with fittings, $7.00; complete without fittings ..... $ 5.00
6 Dadant electric wire imbedders. Price each ..... .75
80 Bee Models—The Anatomy of the Bee. Price each ..... .25
100 lbs. C490561—Crate staples, 1½ x ¾-inch. Price per pound ..... .12
79 super covers, metal ends, 8-frame, nailed. Price each ..... .15
5 crates, 50 each, 8-frame Gable Covers. Special per crate 30.00
12 crates, 50 each, 10-frame Gable Covers. Special per crate 32.50
34 crates, 5 each, 10-frame Gable Covers. Special per crate 3.50
14 crates, 500 each, shallow frames, 5⅜ with ½-inch wedge top-bar. Per crate 20.00
24 crates, 50 each, Pritchard bee-shipping boxes for 2 lbs. of bees, without feed, KD. Per crate 30.00
6 crates, 100 each, 8-frame D section cases KD, glass one end. Per crate.. 8.00
6 crates, 100 each, 10-frame D section cases KD, glass one end. Per crate.. 8.50
21 Doolittle solar wax extractors. Each 7.50
12 Boardman solar wax extractors. Each 19.00
13 Dadant uncapping cans. Each 13.00
11 round Root capping melters. Each... 12.00
18 cartons 70 each, 3-lb. friction-top cans. Per carton 3.00
658 3¾-inch flat screw caps with flat flange, $2.50 per 100; for the lot 12.50
313 3¾-inch flat screw caps with flange turned to fit a 4 5-16-inch can body. For the lot 7.00
22 Thale regulative vacuum bee-feeders. Price each ..... .40

In addition to the above bargains we have in stock 5000 second-grade Hoffman frames, standard size 9⅛x17⅝, packed in cartons of 100 only which we offer at the special price of $5.00 per hundred as long as present stock lasts. Sample sent on request. We also have the following second-hand goods to offer:

12 used 10-frame, old style wood covers, each $0.15
12 used 10-frame old style bottom-boards, each ..... .15
38 used 8-frame wood covers, each ..... .20
40 used 8-frame wood-zinc honey-boards, each ..... .15
4 used 8-frame 7 wood-wire honey-boards, each ..... .30
35 used 8-frame old-style Danzenbaker supers, each ..... .15
18 used 8-frame inner covers or bee-escape boards, each ..... .15
20 used 3-frame nuclei queen-mating hives, standard size. Each 1.00
100 used baby nuclei twin mating hives, empty. Each ..... .60
9 used Miller feeders, nailed. Each ..... .25
69 used 8-frame old-style Danzenbaker shallow extracting supers, complete with frames, in good condition, each ..... .40

Above prices are strictly net f. o. b. Medina.

The A. I. Root Company, Medina, Ohio.

A BIG BARGAIN IN ENVELOPES.

Through a fortunate purchase, we are able to give you the best bargain in envelopes you ever had offered to you. Look at these prices and **get in your order at once** for the supply will not last long.

250 for $2.00; 500 for $3.00; 1000 for $4.50. These envelopes are white bond, regular business size (6¾) and the prices include your business card printed in the corner in one color of ink. The postage or express charges will be extra.

THE A. I. ROOT COMPANY,
West Side Station. Medina, Ohio.

THE NEW EDITION OF A B C AND X Y Z OF BEE CULTURE.

The new 1923 edition of the A B C and X Y Z of Bee Culture is now ready for distribution. This has been rewritten entirely and brought strictly up to date. In its new fabrikoid binding it is an attractive book. The price is $3.50. We offer it in combination with a year's subscription to Gleanings in Bee Culture for $4.00. The A. I. Root Company, West Side Station, Medina, Ohio.

Special Notice by A. I. Root

Back Once More at the Old Medina Home.

Here I am again, friends, just about the same as ever, except that I am a little more deaf, and perhaps a little more forgetful, than I was six months ago. But I am still thanking the Lord that he has permitted me to live while such great and wonderful things are going on. I am thanking the Lord every day for having permitted me to see the wonderful improvements in methods of travel and transportation that have been coming for the past 80 years—not only in transportation (ox team to automobile) but in the means of conveying intelligence. Of course I can not hear the wonderful things being done with the radio, but I can use my eyes and read about them. The great question now before this world, and may be before the whole wide universe, is, "Are these new and wonderful inventions going to contribute to the advancement of righteousness, temperance and purity?" They will if we do not forget, each and all, to use our influence on the right side, and, above all, if we do not forget to pray.

XUM

ROOT QUALITY SUPPLIES

East St. Louis, Ill.
O. G. RAWSON, 3208 Forest Place.
Send for Catalog.
Authorized Distributor for St. Louis district.
BEES AND QUEENS.

Mott's Northern-Bred Queens

Sel. Untested, 1, $1.00. Sel. guaranted pure mated, $1.25. Sel. Tested, $2.50. Virgins, 60c. Plans "How to Introduce Queens," 25c. Bees by the pound after June 1. 172 miles from Windsor, Can. Save the vitality of your queens.

E. E. MOTT, GLENWOOD, MICH.

PURE BRED CARNIOLANS

are hardier, gentler, much more prolific and better honey-gatherers than Italians. Highly disease-resistant, longer-tongued, build up more quickly in the spring; build snow-white comb and as winterers they are unexcelled. If properly managed will swarm no more than Italians. We are breeding from stock we imported direct from Carniola. **They are pure.**

WRITE FOR OUR FREE CIRCULAR, which gives you more fully the merits, management, prices, etc., of our Carniolans. It also gives you accurate information on the other races of bees. INVESTIGATE, get the facts. CARNIOLANS merit your trial over others.

W. A. HOLMBERG, DENAIR, CALIF.

Indianola Apiary Company

We are prepared to fill your orders by return mail or express for Italian Bees and Queens:

1-lb. pkg. Bees with untested queens ..... $3.25 delivered
2-lb. pkg. Bees with untested queens ..... 5.25 delivered
3-lb. pkg. Bees with untested queens ..... 6.25 delivered
Untested Queens ..... $1.00 each
Tested Queens ..... 1.50 each

Bees inspected, no disease. Thirty years experience, hundreds of satisfied customers. Prompt service and satisfaction guaranteed. "A satisfied customer" is our motto.

J. W. SHERMAN,
Indianola Apiary Company
VALDOSTA, GA.

SAVE QUEENS

by using Rexford Push-in-Comb Introducing Cage. 35c; 3, $1.00. **O. S. Rexford, Winsted, Ct.**

Florida Queens and Bees

From three-banded Italian stock that has been reproducing itself in the Sand Ridge section of Central Florida for over 30 years. Three-frame nuclei with tested queen, $6.00. Tested queens, $1.50 each. Untested, $1.00 each. Write for prices on large lots.

Dixie Beekeeper

A 32-page monthly publication now four years old, devoted to beekeeping and the general interest of beekeepers in Dixie, $1.00 per year. Sample free.

Wilder's Cypress Hives

Are durable and satisfactory. A full line of beekeepers' supplies at low prices. Write for catalog.

J. J. WILDER, Waycross, Ga.

Delivered to you Free for 30 days trial on approval. Your choice of **44 Styles,** colors and sizes of the famous **Ranger** Bicycles. Express prepaid. Low Factory-to-Rider Prices.

12 Months to Pay if desired. Many boys and girls easily save the small monthly payments.

Tires wheels, lamps, and equipment at half usual prices. Write for remarkable factory prices and marvelous offers.

Mead Cycle Company Dept. P 153 **Chicago** Write us today for free catalog

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.
533-583 Pike St. Cincinnati, O.

FREE Samples & Roofing Book

Your Chance For a Honey Crop

We have 1500 and more packages of bees unsold. We are equipped to ship bees and queens and have cages ready for them. Will offer the above at a sacrifice.
Remember when you purchase from us you don't take chances; you get the best strain of long line bred three-banded bees and queens and 12 years' experience in producing the quality. Promptness, health certificate, safe delivery, are our guarantee.
The 2-lb. package on Root standard frame and the nuclei are what we offer.
2-frame nucleus, well covered with young bees, same price as 2-lb. packages.

2 lbs. bees frame brood with adhering bees, in lots of 10 or more, $3.25 each; 25 or more packages, $3.00 each; 50 or more, $2.90 each; 100 or more, $2.75 each. For additional frame of brood or pound of bees add 75c each package.
Untested queens for the above packages only 10 or more, 95c each; 25 or more, 90c each; 50 or more, 85c each; 100 or more, 80c each.

We are ready to ship. Do not delay. Send your orders to the home of Good Queens.

OSCAR MAYEUX

HAMBURG, LOUISIANA.

QUEENS OF

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Untested queens, $1.25; 6, $6.50; 12, $12.00. Select untested, $1.50; 6, $8.00; 12, $15.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, QUEEN BREEDER, Route 1, Morgan, Kentucky.

"SPECIAL"

3-BAND ITALIAN QUEENS FROM TENNESSEE.

We have procured from a prominent honey producer two of his best queens (L. H. Roby-Geo. B. Howe strain). We reared, from these, a few queens last year, trying them out in our own yards and find them them very **SUPERIOR.**
Untested queens, reared from these queens, mated to drones of our own **SUPERIOR** strain, $1.25 each; six for $7.00; $12.00 per doz. After July 1st, $1.00 each; six for $5.00; $9.00 per doz.
Guarantee—Safe arrival, pure mating and entire satisfaction.

J. I. BANKS - DOWELLTOWN, TENN.

"ROOT QUALITY" BEE SUPPLIES

FULL STOCKS
PROMPT SERVICE

A. I. ROOT CO. of NEW ORLEANS
2042 Magazine St., New Orleans, La.

Also Headquarters for Elton Warner's Three-banded Italian Queens, Nuclei and Combless Packages.

One Elton Warner Quality untested Queen, one frame emerging brood with adhering bees and one pound of young, vigorous bees, price $5.00 f. o. b. New Orleans. Extra bees, $1 per pound.
3-frame nucleus, with Elton Warner Quality Untested Queen, price $5.50 f. o. b. New Orleans.
Combless packages, $1 for package, plus $1 per pound for bees, and price of queen, if queen is wanted.
Young, vigorous TESTED Elton Warner Quality Queens, wonderful honey-gathering strain, for EARLY spring shipment, $1.60 each, postpaid.
Untested Elton Warner Quality Queens, after April 10, $1.15 postpaid.
Everything guaranteed, including delivery date. No disease. 20 per cent books order. 10 per cent discount on orders of over $20. 15 per cent discount on orders of $60 or over.

Almacen de exportación para México y Centro America. Correspondencia en castellano.

You Lucky

3-BANDED GOLDENS.

You may be if yours is one of the 15th orders we receive, for to every 15th order we have a pleasant "SURPRISE." Will you be pleased? We think so, both with our queens and your lucky "SURPRISE." Now ready to ship. Safe arrival and satisfaction guaranteed in U. S. and Canada. Wings clipped free on request. Prices—Untested queens, $1.00 each. Sel. untested, $1.25 each. Sel. tested, $2 00 each. Virgins, 50c each. Special package bees shipped from Louisiana, 2-lb. package with queen and frame hatching brood, $5.00. 3-lb. package, $5.75. Nuclei, write for prices.

OHIO VALLEY BEE COMPANY, CATLETTSBURG, KY.

May Queens From My Pure Italian Stock

Will get you ready for the honey flow.

Untested	**$ 1.00**
100 Untested	**90.00**
Tested	**1.75**

No Disease.

D. W. HOWELL, SHELLMAN, GEORGIA

1923 Quality Bees and Queens 1923

OUR QUEENYARDS ARE IN CHARGE OF A TEXAS PIONEER QUEEN-BREEDER.

Our equipment has been greatly increased but always with the one aim—to produce QUALITY rather than quantity. Orders now are being booked for spring delivery at the following prices:

1-lb. package bees, $2.25; 25 or more, $2.15
2-lb. package bees, 3.75; 25 or more, 3.60
3-lb. package bees, 5.25; 25 or more, 5.00
Add price of queen wanted when ordering
1-frame nuclei 2.25
2-frame nuclei 3.75
3-frame nuclei 5.25
Add price of queen wanted when ordering packages.
1 Untested Queen, $1.50; 25 to 100, $1.30; 100 or more..... $1.10
1 Select Untested, $1.75; 25 to 100, $1.50; 100 or more..... 1.25
1 Tested Queen, $2.25; 25 to 100, $2.00; 100 or more..... 1.75
1 Select Tested, $2.50; 25 to 100, $2.25; 100 or more..... 2.00
Breeders, $5 and $10. Breeders are guaranteed only when shipped on nuclei.

The following letter is one of many received by us the past season, praising our queens:

WHITEROCK APIARIES,
GEO. M. JEFFUS, Prop.
Producers of High Grade Honey.

Crockett, Tex., Nov. 6, 1922.

"These introduced first have already shown of the progeny of the new queen and they are good-looking bees to me. All the time since getting interested in bees I have been partial to the Goldens because of looks, but they have nothing on these bees. And, since looks don't pay bills, and believing that these bees I have bought from you came from as good a strain as there is in America, I am perfectly satisfied.

"Very truly,
"GEO. M. JEFFUS."

Satisfaction and safe arrival guaranteed to any point in U. S. or Canada.

THE A. I. ROOT CO. OF TEXAS

BOX 765 **SAN ANTONIO, TEXAS**

TOO LATE TO CLASSIFY.

FOUNDATION at jobbing price. 100-lb. lots. A. V. Small, suc. to C. F. Buck, Augusta, Kan.

LIMITED number of 2-frame nuclei with queen, $3.50; also full colonies of bees. Write for price. A. Nigabower, 67 Center St., Ilion, N. Y.

CHEAP BEES. 20 colonies, $50. Italian bees. Root Co. hives. Bees free from disease. Will not ship. Buyer must come for them. J. W. Garry, Sylvan, Pa.

FOR SALE—4 hives of Italians, guaranteed free from disease. Also gas engine. Will sell or trade for extractor. Quirin Siefert, Batesville, R. D. 3, Ind.

FOR SALE—200 used standard hives, 8 and 10 fr.; 8-fr. Ideal supers, in lots of 10 or all. Selling out, going south. Box No. 33, Waltham, Mass.

I WISH to thank the purchasers of my bees and queens for this season's business gained by my advertisement in both the Gleanings and the American Bee Journal. J. P. Anthony, Apalachicola, Fla.

ITALIAN BEES AND QUEENS—1 frame of brood and bees, 1 pound of bees, 1 Italian queen, $5.00. Additional frame of brood or 1 pound of bees with above, $1.00. Queens only with packages. H. P. Le Blanc, 2938 Palmyra St., New Orleans, La.

FOR SALE—30 colonies of Italian-hybrid bees in 10-fr. hives, on Hoffman wired frames, free from disease. Exceptionally strong and heavy last fall. Will sell for $6.00 each. Over $100 worth of supplies which I will sell at a sacrifice. Reason for selling, unable to handle them longer because of old age. W. S. Williams, Julian, Pa.

FOR SALE—20 colonies Italian bees, free from disease. Good strain. Extra supplies. A. C. Gould, Burchfield, W. Va.

Quigley Italian Queens

are produced by double grafting, giving you queens of superior quality, that fill your big hives with bees bred for honey, gentleness and great vitality. Prices before July 1: Tested, $2.50. Untested: $1.50; 6 for $8.00; 12, $15.00. Fine breeders, $5.00 to $10.00. Never had any disease. 37 years in this location. Purity and satisfaction guaranteed. A few 3-fr. nuclei and 2-pound packages unsold. Get our circular.

E. F. QUIGLEY & SON, Unionville, Mo.

A BARGAIN IN A B C BOOKS.

We have a few copies of the 1920 edition of the A B C and X Y Z book which are in a slightly damaged condition. The reading matter is complete but an occasional page may be a little torn or wrinkled, or the cover may be damaged. We will sell these few books for $1.50 each. The A. I. Root Company, Medina, Ohio.

QUEENS

NUCLEI POUND PACKAGES

Jensen's Apiaries can save you real money on your purchases of bees and queens. We have had the experience, we have the bees and equipment. We want to supply your wants, not only this year, but in years to come. Our foundation was built upon sound business principles, with the idea of making this business a lifetime occupation. We know your success is ours; therefore when you deal with us you are assured of your money's worth. Our growth has far surpassed our expectations, and it is indeed encouraging. Our motto will remain, "To give you the best value for the price you pay, both in goods and service consistent with a living wage for ourselves." Pure Italians only. Select breeding. Up-to-the-minute methods. No disease, prompt shipments, safe arrival guaranteed.

QUEENS.

Untested, 75c each, $70.00 per 100.
Select Untested, $1.00 each; $90.00 per 100.
Tested, $1.25 each.
Breeders, $5.00 and $7.50 each.

PACKAGE BEES.

2 lbs. Italian bees and untest. queen, $4.50. 25 or more pkgs., $4.00 each.
3 lbs. Italian bees and untest. queen, $6.00. 25 or more pkgs. $5.00 each.

NUCLEI.

2-frame with queen (your choice of untested or young tested), $5.00 each; 25 or more, $4.50 each.
3-frame with queen as above, $6.50; 25 or more, $6.00 each.

For a square deal address your orders to

JENSEN'S APIARIES, Crawford, Miss.

Mack's 3-Band Italians

Represent the highest standard to which queens have thus far advanced. For gentleness, hardiness and prolificness you will find them preeminent. We rear them to give you complete satisfaction. The kind we use in our apiaries are the kind we send you. If they please US, WE KNOW they will please you. Why compel your queens to travel several hundred miles when you can get as good queens, if not better, closer home? Think it over and then send for our catalog. It contains several good points that will be well worth your time to read. Your name and address on a postal will bring it.

UNTESTED.

1 to 49.....$1.00 each.
50 to 99..... .95 each.
100 and up..... .90 each.

Other grades and prices quoted in catalog.

HERMAN McCONNELL
ROBINSON, ILLINOIS

The Joy of a Record Crop

Is the Aftermath of a Season Well Spent

LET US REQUEEN YOUR COLONIES WITH FOREHAND'S 3-BANDS. THEY ARE QUEENS OF THE BETTER KIND.

We believe this is the most liberal offer ever made on bees and queens. Supply your needs from these prices, test them in your yards, and, if they are not satisfactory, every cent of your money will be cheerfully returned. NO ARGUMENT ABOUT IT; THEY SATISFY OR THEY DO NOT. Order now and get your queens and bees when you want them. 10 per cent of the full amount with order is all that is necessary at time of booking.

Untested: $1.00 each; 10 or more, 90c each; Sel. Untested, $1.25 each; 10 or more, $1.15 each. Tested, 1 to 4, $2.50 each; 5 to 11, $2.45; 12 to 24, $2.40 each; Select Tested, 1 to 4, $4.00 each; 5 to 11, $3.95 each.

	1	25 and up
One lb. pure Italian bees with young queen	$3.00	$2.90
Two lbs. pure Italian bees with young queen	5.00	4.75
Three lbs. of pure Italian bees with young queen	6.00	5.75

Write for prices on larger lots.

All bees and queens guaranteed to reach you in good condition in the U. S. and Canada.

N. Forehand, Ramer, Alabama, U. S. A.

WE MANUFACTURE

BEE SUPPLIES

THAT *Are Made to* SATISFY

Let us quote you prices before you place your order, and we will save you money.

Write for our new 1923 catalog, showing full line of Bee Supplies.

Special prices to Beekeepers' Associations.

——Write to——

A. H. RUSCH & SON CO.

REEDSVILLE, WISCONSIN.

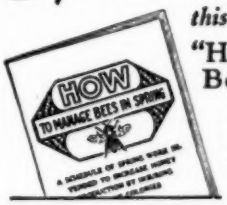
Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.

CHAS. J. WILLIAMSON,

McLachlan Bldg., Washington, D. C.

5¢ Postpaid

this Practical Booklet



"How to Manage Bees in Spring"

How to increase honey production and profits—plan spring work about the apiary, save time, build up colonies, get more and better honey.

THIS 8-page booklet is worth dollars to any practical bee keeper—shows how to make your bees pay as registered dairy cows pay. With 52-page catalog of Lewis Beeware, listing latest improved high grade bee supplies—Lewis 4-Way Bee Escape, newest approved hives, supers and sections, wired foundation, power extractors, etc., postpaid to any address in the world for 5c. Write for booklet today

G. B. LEWIS COMPANY

Since 1873 leading manufacturers of Quality "Beeware."

Dept. C Watertown, Wisconsin

Immediate Service from ample stocks in nearly every state in Union. Write for name of nearest distributor

LEWIS BEEWARE

WE PAY TRANSPORTATION

Give Prompt Quick Service. Many Fast Through Trains North and West Daily.

PIONEERS IN THE SHIPMENT OF BEES IN PACKAGES BY THE POUND.

Nearly twenty years ago one of our firm conceived the idea of shipping swarms of bees in packages. It was tried using sections of honey as food for the bees while in transit; but, as these combs broke up badly and daubed the bees this way, it was not considered a success. Later we tried the present and best food for bees while in transit, pulverized sugar and honey. Since it has been our pleasure to be among the foremost in building up the present great package industry. Experience is said to be one of the best teachers. Quality of goods and service count for a lot, we have learned. We have them both.

PRICES OF PACKAGES AND QUEENS—TRANSPORTATION PAID.

1-pound packages with young selected queens	$3.25 each
1½-pound packages with young selected queens	4.00 each
2-pound packages with young selected queens	5.25 each
3-pound packages with young selected queens	6.25 each
1-frame nuclei with 2 lbs. of bees and selected young queens (for beginners)	6.50 each
Untested young selected queens	1.00 each
Tested young selected queens	2.00 each

25c less per package on lots of 12 or more and 10c less on queen lots of 12 or more. Wings of queens clipped free of charge when requested. Prompt delivery, safe arrival and entire satisfaction guaranted. Let us book your order now. 10 per cent cash with order. No disease in our bees. Let us mail you our new 1923 booklet which is now ready.

DON'T FORGET: "JONES PAYS THE FREIGHT."

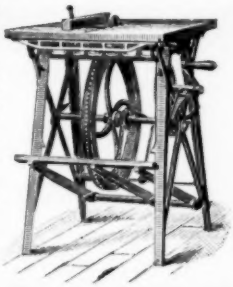
M. C. BERRY & CO., Box 697, Montgomery, Alabama

BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial.
Send for illustrated catalog and prices.

W.F.& John Barnes Co.
545 Ruby Street
ROCKFORD, ILL.



BEEKEEPERS

I am putting my name and address in this space to tell you that I am making cypress beehives, cypress supplies such as hive bodies, covers, bottom-boards and other items for the beekeeper.

I want an opportunity to figure with you on your wants. Prices and goods right. Ask for my prices.

J. TOM WHITE, DUBLIN, GA.

Mr. Beekeeper

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. **We pay the highest cash and trade prices for beeswax. Write for free illustrated catalog today.**

Leahy Mfg. Co., 95 Sixth St., Higginsville, Mo.

Texas Distributors—Albert M. Hunt & Sons, Goldthwaite, Texas.

Wisconsin and Illinois BEEKEEPERS

You want prompt service when you order bee supplies. Our location is unexcelled for making prompt shipment to your place, no matter where. Chicago leads the world in shipping facilities. Service plus quality cannot be beat. That is what we offer you. Send for 1923 catalog.

A. I. ROOT COMPANY OF CHICAGO
224-230 W. Huron St., Chicago, Ill.
Chicago has 33 Steam Railroads.

Root QUALITY BEE SUPPLIES

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER, NEW YORK (Near Jamestown).

"Where the best beehives come from."

Ask for Catalog. Booklet, "Simplified Beekeeping for Beginners," free.

XUM

STOUGH'S QUALITY QUEENS

Breeding Queens Imported from Italy.
Three-Banded Italians Only.
Shipped When You Want Them.

Let me have your order for the 1923 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous three-banded Italian Queens from my imported stock.

You take no risk buying from Stough. If you are not satisfied, I will replace or refund your money. Safe delivery guaranteed.

Untested—1, $1.00; 6, $5.50; 12, $10.
Selected Untested—1, $1.25; 6, $6.50; 12, $12.00.

N. G. STOUGH, Ramer, Ala.

Queens and Package Bees

We do not claim to have the best bees in the South, but we do claim to have as good as the best. Let us fill your order and you will not regret it.

We guarantee satisfaction, safe arrival and freedom from disease. Inspection certificate with every order.

As we are pulling our pure stock very low, we have purchased several yards of mixed bees that are state-inspected, and quote prices on same.

Remember every package will include one of our best purely mated queens. We ship no culls. And they are bred by men that know how.

Prices include queens.

1-lb. package	$3.00
2-lb. package	4.00
3-lb. package	5.00

QUEENS—UNTESTED.

1	$ 1.00
6	5.50
12	10.00
100	75.00

The Plantersville Apiaries
Plantersville, Miss.

Norman Bros. 3-Banded Italians

Queens and Bees by Return Mail

Mr. Beekeeper: We have the stock, equipment and experience and can give you prompt satisfactory service.
We are not going to say that we have the best bees and queens in U. S. A. but we do say that we have as good as can be bought for the money. Give NORMAN BROS. 3-banded Italian bees and queens a trial and see for yourself. You risk not a brown penny; if you are not satisfied, notify us and we will replace or refund your money. Isn't this a fair proposition to any one that purchases queens and bees? Our bees are hardy, prolific, gentle and honey gatherers.

Prices—	1	6	12	100
Unt. Queens	$1.00	$5.50	$10.00	$72.00
Sel. Untested	1.20	6.50	12.00	90.00
Tested Queens	1.75	10.00	19.00	
Sel. Tested	2.00 each.			

One 2-lb. package bees with Select Untested Queen, $4.00; 12 or more, $3.80 each. We guarantee pure mating, safe arrival and free from all diseases.

NORMAN BROS. APIARIES,
Naftel, Ala.

QUEENS

Queen-rearing is now on in full blast at Vincennes. Fruit trees are giving up their nectar in abundance, and we are turning out the finest queens by the bushel. Orders can be filled promptly. A card will bring our catalog describing our Untested Queens and also our exceptional "Service Guarantee for the season" on Breeding Queens.

"Queens by the bushel."

Prices:

Untested Queens before July 1: 1 to 4 inclusive, $2 each; 5 to 9 inclusive, $1.95 each; ten or more, $1.90 each. After July 1: 1 to 4 inclusive, $1.50 each; 5 to 9 inclusive, $1.45 each; ten or more, $1.40 each.

Breeding Queens, service guaranteed for the season, $10.00 each.

JAY SMITH
ROUTE 3. VINCENNES, INDIANA

THREE-BANDED ITALIANS

21 Years a Beekeeper

BOOKING ORDERS FOR 1923.
QUEENS READY APRIL 1.

We ship thousands of our Old Reliable Three-banded Italian Queens all over the U. S. A. and Canada every year. They are of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, very resistant to brood diseases, and the best of honey-gatherers. We have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed in U. S. and Canada. Circular and price list free.

Untested—$1.25; 6, $6.50; 12, $12.
Tested—$2.50; 6, $14.00; 12, $27.
Sel. Unt.—$1.50; 6, $8.00; 12, $15.
Select Tested—$3.00 each.

JOHN G. MILLER

723 C Street. CORPUS CHRISTI, TEXAS

Will Your 1923 Nuclei be Satisfactory?

If you order Hummer Bees and Queens they will. We ship only the best of Three-Band Italians. Nuclei are made up of sealed brood and plenty of young bees to build up rapidly and produce maximum crops. We use extreme care in packing to reach destination safely and will replace or refund money promptly in case of loss if purchaser sends us bad order receipt from express agent. We give as good service on small orders as on large ones, and solicit orders from beginners and small beekeepers as well as large orders. 800 strong colonies set aside to draw from. Ten per cent of amount of order to book, balance just before shipment is made.

1923 PRICES, F. O. B. MACON, MISS.

2-frame Nuclei and Untested Queen, $4.25 each; 25 or more...$4.00 each
3-frame Nuclei and Untested Queen, $5.25 each; 25 or more...$5.00 each
2 lbs. Bees and Untested Queen, $4.50 each; 25 or more.....$4.00 each
3 lbs. Bees and Untested Queen, $5.50 each; 25 or more.....$5.00 each

100 stands bees in Danz. Hives at bargain. One-piece cypress covers and bottom-boards.

Geo. A. Hummer & Sons
PRAIRIE POINT, MISS.

Connecticut Queens

Highest Grade 3-banded Italians, guaranteed to please you or your money back. If you want good prolific queens that produce hardy, hustling workers, try some of these queens.

June 1st, Untested.		Package Bees and Nuclei with Queens.	
1	$ 1.15	2 lbs., $4.50 each; 10 or more, $4.00 each	
12	12.00	3 lbs., $5.50 each; 10 or more, $5.00 each	
50	47.50	2-frame Nuclei	$5.00 each
100	90.00	3-frame Nuclei	$6.00 each

ALL CORRESPONDENCE WILL RECEIVE PROMPT AND CAREFUL ATTENTION.

Connecticut Valley Apiaries, A. E. Crandall (Breeder), Berlin, Conn.

ITALIAN QUEENS---THREE BANDED AND GOLDENS

After rearing queens in a commercial way for 12 years, and on a large scale, we believe we can offer as good queens as can be had. Our breeder has reared over 110,000 queens and beekeepers who wanted good stock have bought them, and got good results from them.

We use only the best breeding stock, and use only the best methods in rearing our queens. Send us your order and get good value for your money. Everything we sell must please or we refund your money.

PRICES OF QUEENS.

Untested Queens:		Tested Queens:	
1 Queen	$ 1.00	1 Queen	$ 1.50
12 Queens	10.00	12 Queens	17.00
100 Queens	75.00	Good breeders, each	5.00
1000 Queens	700.00		

Golden Queens are reared five miles from other queen yards. Let us fill your order. We are mailing Queens promptly.

THE CITRONELLE APIARIES, CITRONELLE, ALABAMA.

St. Romain's

Superior Italians

World-famed as

RECORD HONEY PRODUCERS
RECORD BROOD PRODUCERS

QUEENS
United States and Canada.

I can furnish daughters of Hamburg Honey Girl, a twenty-comb granddaughter of St. Romain's Honey Girl, for all orders received thirty days before shipment desired. Rush orders will be filled with daughters of Hamburg Honey Girl when available, otherwise with daughters of other select breeding queens.

QUEENS.

	1 to 4.	50 or more.
Untested	$1.65 ea.	$1.50 ea.
Selected Untested	2.00 ea.	1.75 ea.
Tested	2.00 ea.	1.75 ea.

Selected tested, suitable for Breeding Queen $10.00

Guaranteed breeding queen whose daughters show superior qualities, priced according to individual merit.

Prices F. O. B. Shipping Point.

2-lb. pkg. with untested queen $4.75. 25 or more, $4.50 each.
3-lb. pkg. with untested queen, $6.25. 25 or more, $6.00 each.
4-lb. pkg. with untested queen, $7.25. 25 or more, $7.00 each.

2-frame, 3-frame or 4-frame nuclei, same price respectively as 2-lb., 3-lb., and 4-lb. packages.

Guarantee.

Satisfaction you have a right to expect; certificate of inspection; safe arrival; all queens to be purely mated. Should any untested queen be mismated or inferior in any way I will refund your money or replace the queen when complaint is made thirty days after receipt of queen. Complaint for damaged package should be accompanied by Express Bad Order Bill.

Chaffee-Crites Bee Farms, Amenia, N. D., have leased St. Romain's Honey Girl for the season.

J. L. ST. ROMAIN, Apiarist

White Clover Farm and Apiary,
HAMBURG, LOUISIANA.

Collier's Bees AND Queens

Three-Banded Italians Only

They Satisfy; Yes—

Because they are bred from the very highest quality and by men who know how. They are as good as money can buy at any price, so let me have your order for the 1923 season. One-fourth down will book your order, balance due just before shipment is made. You take no risk buying from Collier. If you are not satisfied, I will replace or refund your money. Safe delivery guaranteed in U. S. and Canada. No disease. Prices: Untested, 1, 95c; 6, $5.20; 12, $10.00; 24, $19.00; 100, $74.00. Select Untested, 1, $1.35; 6, $7.00; 12, $12.00; 24, $23.00; 100, $90.00. Tested, 1, $2.50; 6, $13.50; 12, $24.00. Select Tested, 1, $3.50; 6, $18.00; 12, $32.00. 1-lb. package bees, with untested queen, $3.00; more than 1, $2.75 each. 2-lb. package, $5.00; more than 1, $4.50. Write for special prices on larger lots. Queens by return mail.

D. E. COLLIER

RAMER - - ALABAMA

Quality and Service

From Florida-Bred Genuine
3-Band Italians

Shipped only on good combs of natural stores, insure fresh arrival and quickly build strong, hustling colonies. It has always been our aim to put out bees of the best quality. We have put forth our very best efforts in careful breeding from bees possessed with rare qualities of vigor, gentleness and beauty, which enables us to offer a great honey-gathering strain. The best-known methods are used in our queen-rearing, putting quality ahead of quantity. We send out only such queens as we would be willing to head our own colonies. We guarantee safe arrival, satisfaction and no disease. Certificate of inspection with each shipment. 20 per cent to book order, balance before shipping. Ship by express only.

Prices Include Choice Queens.

	1-11.	12-24.	25 up.
2-lb. package.....	$4.50	$4.25	$4.00
3-lb. package	5.50	5.25	5.00
3-frame nuclei ...	5.75	5.50	5.25
10-frame colonies			$15.00 each

M. L. NISBET & BRO,

P. O. BAINBRIDGE, GEORGIA.

What Will You Get Out of It?

The results of over a quarter of a century of careful selecting and breeding by beekeepers of world-wide renown. This, combined with the service that is pleasing America's greatest honey producers, goes into every transaction.

The Superior Honey Co. of Ogden, Utah, said: "We want to thank you for your promptness in making shipment and when we are next in the market for queens you will hear from us."

Mr. Clarence Ellison of Belton, S. C., for five successive years, got the heaviest yield ever produced in his locality by using

Forehand's Three Bands, the Thrifty Kind

The strain that 31 years of careful selecting and breeding has produced. We have bred and selected to produce a strain that is truly **surpassed by none but superior to many; a bee that is the thrifty kind.**

From every transaction you will get service that pleases and bees and queens that will make your investment a profitable one. You are assured of this by our service of the past.

We guarantee pure mating and satisfaction the world over and safe arrival in the U. S. and Canada.

	1	12 to 25	25 to 99	100 up
Untested Queens	$1.00	$0.85	$0.80	$0.70
Select Untested Queens	1.25	1.00	.90	
Tested Queens	2.00	1.75		
Select Tested	2.50	2.25		

POUND BEES.

	1	25 up
One-pound package	$2.10	$1.90
Two-pound package	3.50	3.30
Three-pound package	5.00	4.75

W. J. FOREHAND & SONS, FORT DEPOSIT, ALA.

Nuclei and A. I. Root Bee Supplies for 1923

One extra pound of bees with each nucleus and shipped on capped brood. Seventeen years of experience has taught us that a three-frame nucleus, if received before May 15, will gather a surplus crop of honey. With the extra pound of bees you are doubly assured of that fact. I would be pleased to have Beekeepers, who have become dissatisfied with pound packages and nuclei, to try our nuclei.

"To whom it may concern: I have this day, Sept. 22, 1922, completed the inspection of the yards of A. R. Irish, and found them free from contagious bee diseases.—S. V. Brown, State Inspector of Apiaries."

"My nuclei came in first-class condition. They are surely the finest lot I have ever seen. I will want 280 this coming season.—Earl Thacker, Fairbury, Neb."

"The nuclei arrived in fine condition.—H. M. Daniels, Caribou, Maine."

"I am much pleased with your stock and I have recommended your bees to a number of beekeepers.—Otto W. Gall, Inspector of Apiaries, Binghamton, N. Y."

3-frame Nuclei of Italian Bees, with queen ..... $5.00 each
3-frame Nuclei of hybrids, with Italian queen ..... $4.50 each

Write for prices on large orders. All queens will be bred from Root stock. Over 800 colonies of Italians to supply the trade. We guarantee safe arrival and free from disease and satisfaction. Health certificate accompanies each shipment. We aim to give quality, quantity and quick service.

A. R. Irish, Nuclei Specialist
Box 134 :: Savannah, Georgia

XUM

Reduction in Prices on Three-Banded Italian Queens and Package Bees

I will pay Transportation Charges same as last season.

Can now send 2-lb. packages (six pounds gross) through to Canada via parcel post. Prices prepaid to buyers' address, either via express or parcel post. Effective also with orders already booked:

1-pound package including young queen	$3.25
2-pound package including young queen	5.25
10 or more packages, either size	25c per package less.
1 select (one grade) untested queen	$1.00
10 or more select (one grade) untested queens, each	.90
Tested queens, each	2.00

Should you find a queenless colony, send to me for young queen to save them. I will not disappoint you. Now ready for mailing. Safe arrival of bees and queens, pure mating, a perfect queen and satisfaction guaranteed. Furthermore, I make good my guarantee. Ten per cent cash required to book order; balance just before shipping. I have the bees, men and equipment to ship on the day you name. No disease.

JASPER KNIGHT - HAYNEVILLE, ALABAMA

The Highest-Priced Queens on Record

Our two-hundred-dollar queen is still on the job and we hope to send out hundreds of her queens this year.

Her daughters made some wonderful records last year. One of them we secured for a breeder from Mr. W. A. Crites, Amenia, N. Dak., this queen having made a record that we consider as good as her mother's. We paid $125.00 for a half interest in this queen and are to have the use of her till June 1, 1924.

There may be other queens as good as these, but after publishing their records continuously for more than a year in the bee journals and leading dailies of this country we have found none that broke these records.

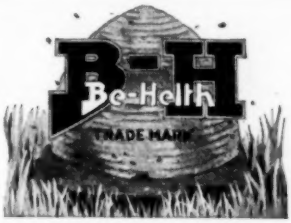
PRICE LIST.

Packages Bees with Queens from the above-mentioned breeders. Safe arrival and satisfaction guaranteed.		Package Bees with Queens from Other Breeders.	
1 2-lb. package with untested queen	$ 5.75	1 2-lb. package with untested queen	$ 5.25
12 2-lb. pkgs. with untested queens	67.00	12 2-lb. pkgs. with untested queens	61.50
Untested queens	1.75	Untested queens	1.25

Write for the story of these queens and complete price list; also prices on larger quantities.

J. M. CUTTS & SON, Route 1, Montgomery, Alabama

One season of Foul Brood trouble might wipe out the work of years.



Send for a gallon of B-H today. It is made particularly to combat Foul Brood.

Kills American Foul Brood Germs

Inexpensive B-H Treatment Restores Infected Extracting Combs and Purifies Contaminated Honey for Feeding.

Do you realize that one season's epidemic of Foul Brood can wipe out a large part of your apiary? **B-H is made particularly to combat Foul Brood, both American and European.**

The beekeeper who considers his apiary in the light of a worth-while investment will recognize that B-H is the greatest possible aid to saving needless waste of combs and honey through these diseases. Not only to himself, but to his neighbors and the bee industry at large, does every beekeeper owe the duty of doing his best to combat Foul Brood!

Anyone can use B-H successfully if he follows directions carefully. Experienced help is not necessary. The expense of treatment is low—insignificant as compared to the losses of frames and honey through Foul Brood. Beekeepers everywhere are recognizing the merits of B-H. Early returns from thousands of users indicate that B-H is a definite advance in the bee industry.

Prices.

Single 1-gal. pkg. $3; single 5-gal. pkg. $12.50.

General Laboratories, Madison, Wis.

Gentlemen: Please ship me....gal. of B-H. C. O. D. Frt..... Exp..... If by freight give name of your bank.

Name .....

Address .....

Mail Your Order Today. Send No Money

GENERAL LABORATORIES, MADISON, WIS.

For Years

We Have Been Shipping Thousands of Pounds of Bees All Over U. S. A. and Canada.

ORDER DIRECT FROM THIS AD. WE ARE PREPARED TO TAKE CARE OF YOUR RUSH ORDERS.

2-pound package Bees.....$3.75 each; 25 or more, $3.60
2-frame Nuclei .....Same price as above
3-pound package Bees.....$5.25 each; 25 or more, $5.00
3-frame Nuclei .....Same price as above

QUEENS FREE when 25 or more packages are ordered.

Untested Queens, $1.00 each; 25 or more, 85c each; $70.00 per hundred. **This is a special sale on high quality Untested Queens.**

Select Untested .....$1 70 each; 25 or more, $1.50 each
Tested ..... 2.25 each; 25 or more, 2.00 each
Select Tested ..... 2.65 each; 25 or more, 2.25 each
Breeders .....$5.00 to $15.00

ITALIANS -- CARNIOLANS -- GOLDENS

NUECES COUNTY APIARIES, CALALLEN, TEXAS

The Stapleton Apiaries

Three-Banded Italian Bees and Queens
Not the Cheapest but the Best.

Read What Others Say.

"Your bees arrived in fine shape, only about a dozen dead bees. Also your bees make the trip in less time than the majority of other shippers. They built up quickly, beating nuclei bought from other Southern shippers."—Canada.

"You fulfilled your contract with a generosity that was beyond the letter of the contract. In no instance was there any question by you in regard to a loss claimed by a buyer. Replacements were made with great promptness. Our losses were unusually few, due, I believe, to care in making shipments. It was, indeed, a pleasure to do business with you."—Detroit.

UNTESTED QUEENS, $1.00 EACH. TESTED QUEENS, $1.50 EACH.

One-lb. package bees with untested queen, $3.00; two-lb. package bees with untested queen, $5.00; three-lb. package bees with untested queen, $6.00. Ten per cent discount on orders of $25.00 or more.

Large stock from which to select. Shipments leave Colquitt at 5:30 o'clock P. M., arriving at northern points usually in three days. Satisfaction guaranteed.

N. L. STAPLETON, COLQUITT, GEORGIA.

QUEENS
PACKAGE BEES
THREE-BANDED ITALIANS

In comparing our prices with others remember we pay all transportation charges.

1-lb. packages with untested queens ....$3.25 each
1½-lb. packages with untested queens....$4.25 each
2-lb. packages with untested queens ....$5.25 each
3-lb. packages with untested queens ....$6.25 each

25c less per package on shipments containing 12 packages or more. 50c less per package on shipments containing 25 packages or more.

Sel. unt. queens, $1.00 each. Select tested, $2.00 each. We guarantee pure mating, safe arrival and entire satisfaction.

Place your order with us and receive the reward from our reliable stock. They are wonderful workers, and our customers are getting splendid results from them in every respect. Read what others say about them:

"The 18 queens bought from you were all introduced in colonies that were badly affected with European foul brood, and they cleaned up and Italianized 100%, and I am more than pleased with the results. I will want some more of your package bees and queens next spring."—Iowa.

"I have bought package bees from you; they are wonderful workers and are admired by the local beekeepers for their beauty and gentleness."—New York.

HAYNEVILLE APIARY CO.
HAYNEVILLE - - ALABAMA

Townsend's Bulletin No. 3

Up in Michigan near the writer's home and also over in Maine, the finest Irish potatoes in the world are grown. It would seem that the conditions in those two states are ideal for the production of Irish potatoes, for no other location can come near those two mentioned locations for this purpose. Over in New York the conditions are ideal for the production of buckwheat in its elements. Georgia is famous for its big watermelons; while in the blue-grass region of Kentucky the fast race horses are bred. In southern Louisiana the wonderful strain of three-banded "line bred" SHAW strain of Italian bees are bred. Every thing seems to do its best under favorable conditions, and this ideal location, only 35 miles from the Gulf, seems to the writer to be the one favored location for the breeding of bees. There is a quiescence in the atmosphere; the dove cooes to its mate in the distance, the mocking birds hover about the beeyard with their ever welcome song, and the gray rabbits nestle among the shrubbery and the hives.

What makes this location especially valuable as a queen-rearing location is its continuous honey flow, covering many months of the year. Not a heavy flow, but just enough to stimulate brood-rearing to its height and develop a strain of bees to one's liking. Another feature of this location is, there are no other bees here but the SHAW yards. This is a prairie, with no wild bees nor farmer beekeepers near, so there is no outside drone proposition to contend with. As I said above the location is an ideal one for the purpose of queen-rearing.

I have now something to say! In Bulletin No. 2, in last month's Gleanings, I told you of a wonderful strain of three-banded Italian bees that I found in the SHAW queen-rearing yards, where hundreds of swarms were looked through, every one of them being just plain three-banded Italian bees, with not a single two-banded bee, nor a single four-banded bee, but all three-banded workers with the third band showing distinctly.

I will now introduce you to "Lady SHAW," which the writer considers the greatest mother queen on earth today. "Lady SHAW" is three years old, and is the mother of all those queens that head the nearly 400 swarms and nuclei in the Shaw yards. She duplicates herself every time, her daughters producing the same uniform bees as the mother. While "Lady SHAW" is three years old, she seems as spry and active as a young queen, and I have no doubt but that she will live through this and it is hoped, through the season of 1924. Although several of her daughters will be tested out this season as a queen mother, the old queen will be preserved as long as possible, for the writer considers her the most valuable queen, either dead or alive, ever produced.

This paragraph is just talk: While publishing the Beekeepers' Review up home at Northstar, Michigan, the writer sold many articles to beekeepers at a much less price than was regularly charged by dealers. Dealers did not like this, but it helped out many a beekeeper to buy his supplies at a very reasonable price. You see I was considered a "cheap john guy" by the dealers. I'm still a "cheap john guy" on the queens I have for sale of the SHAW "line bred" strain, for I'm going to sell them so cheaply, quality considered, that every small beekeeper can have one of those wonderful breeders at a nominal price. Listen:

XXX. Very Select Tested for breeding purposes, $10.00 each.

XX. Select Tested for breeding purposes at $6.00 each.

X. Tested for breeding purposes $2.50.

If you buy a very select tested queen for breeding purposes you can have your choice of the yard, excepting a few that we shall test out ourselves as breeders for future use. If you buy a XX breeding queen you will get almost as good a queen as the XXX quality. If you buy a X tested queen you will get a good one, for none but good queens will be sent out at any price. No untested queens will be offered for May delivery, and I am undecided whether any untested queens will be offered for sale. There is not the slightest doubt in my mind but that many of these wonderful queens could have been sold at a much higher price, but I want every small beekeeper to have an opportunity to get one of these queens without his feeling that the price is so high that he cannot afford to buy one. In considering a breeding queen you should take into consideration that the "SHAW strain" of three-banded Italian queens were imported by the Shaws, and have been "line bred" for a third of a century. This is the reason that they breed with such uniform marks and disposition. No bee-veil is necessary in working with the "SHAW strain" of bees.

Let Townsend Buy Your Package Bees for You.

Shall still offer package bees for May delivery at the following prices:

25 2-lb. pkgs. with untested queens for	$92.50
50 2-lb. pkgs. with untested queens for	172.50
100 2-lb. pkgs. with untested queens for	320.00
25 3-lb. pkgs. with untested queens for	115.00
50 3-lb. pkgs. with untested queens for	217.50
100 3-lb. pkgs. with untested queens for	410.00
25 4-lb. pkgs. with untested queens for	137.50
50 4-lb. pkgs. with untested queens for	262.50
100 4-lb. pkgs. with untested queens for	500.00

Note that my prices are about the same as others WITHOUT the queens. A large roomy cage is used and a full-sized L. comb of hatching brood is shipped with each package. The comb also contains honey for the bees during transit. My breeders guarantee safe delivery, and any dead packages will be replaced at once upon receiving a bad-order receipt signed by your express agent. A good health certificate accompanies each shipment.

The season is now so late that the full amount of the purchase price should accompany the order.

Address E. D. Townsend, Loreauville, Louisiana, Successors to J. W. K. SHAW & CO.

4% BANKING BY MAIL

THE HOME OF THE HONEY-BEE

We invite correspondence on the subject of sending 4% Savings deposits by mail, and all communications will receive prompt and courteous attention.

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO

A. T. SPITZER PRES. E. R. ROOT VICE PRES. E. B. SPITZER CASHIER

Italian Bees and Queens

With the extremely hard weather the latter part of the winter, the late spring, the improvement in prices and conditions in general, we are expecting a big rush for packages and nuclei in May. The season here is extremely late, but we will be able to make promised deliveries and to fill orders promptly after May fifth, unless there should be a flood of orders. Our advice is to order early. Safe arrival and satisfaction guaranteed.

Prices of Packages and Nuclei with Queen

	In lots of 1 to 25.	In lots of 25 or more.
One-pound package	$3.25	$3.00
Two-pound package	4.50	4.00
Three-pound package	5.50	5.00
One-frame nucleus	3.50	3.00
Two-frame nucleus	4.50	4.00
Three-frame nucleus	5.50	5.00

Prices of Queens

Tested and untested queens that are proving their superiority to beekeepers over the entire United States and Canada.

	To June 15.	After June 15.
One Untested Italian Queen	$1.25	$1.00
Ten or more	1.00	.75
One Tested Italian Queen	2.00	1.25
Ten or more	1.50	1.00

Cypress Supplies

Standard dimensions, accurately made and are of the most durable woods known. Many are pleased with the excellent quality and low price of these goods.

100 White Pine Hoffman Brood-frames	$ 4.90
5 10-frame One-story Metal-cover Hives	15.75
5 10-frame Bodies with Frames	6.80
5 10-frame Comb-honey Supers, 4¼x1⅞	4.00
5 10-frame Shallow Extracting Supers	4.25

Send for Catalog of Complete Line.

THE STOVER APIARIES, Mayhew, Miss.